City of McCall

City Council

***AMENDED* - AGENDA**
Special Meeting
April 4, 2024 at 5:30 p.m.
Legion Hall – Below City Hall
216 East Park Street
McCall, ID

ANNOUNCEMENT:

American with Disabilities Act Notice: The City Council Meeting room is accessible to persons with disabilities. If you need assistance, please contact City Hall at 634-7142 at least 48 hours prior to the meeting. Council Meetings are available for in person and virtual attendance. Any member of the public can join and listen only to the meeting at 5:30 pm by calling in as follows:
Dial 208-634-8900 when asked for the Conference ID enter: 515 438 047#
Or you may watch live by clicking this link: https://youtube.com/live/h-Tl45pdfnA?feature=share

OPEN SESSION AND ROLL CALL

PUBLIC HEARINGS CONTINUED

AB 24-070 Request to Approve CUP-23-07 – 1300 East Lake Street – Expansion of Mile High Marina (FOR REQUESTED ADDITIONAL INFORMATION ONLY- NO PUBLIC COMMENT) (ACTION ITEM)

AB 24-071 Request to Uphold the McCall Area Planning & Zoning Commission Decision to Deny FPDP-23-01 for a Floodplain Development Permit at 221 Morgan Drive (FOR REQUESTED ADDITIONAL INFORMATION ONLY- NO PUBLIC COMMENT) (ACTION ITEM)

PLEASE NOTE

The listed public hearings are not open for public comment. These public hearings were continued in order for the Council to receive specific information regarding these items.

BUSINESS AGENDA

AB 24-072 City Manager Recruitment Update and direction to staff (ACTION ITEM)
(***ADDED 3/29/24)***

ADJOURNMENT

City of McCall

City Council

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Special Meeting
April 4, 2024 at 5:30 p.m.
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OPEN SESSION AND ROLL CALL

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ADJOURNMENT

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McCALL CITY COUNCIL
AGENDA BILL

216 East Park Street
McCall, Idaho 83638

Number **AB 24-070**
Meeting Date **April 4, 2024**

AGENDA ITEM INFORMATION				
SUBJECT: ***Request to Approve CUP-23-07 – 1300 East Lake Street – Expansion of Mile High Marina*** ***A PUBLIC HEARING (FOR REQUESTED ADDITIONAL INFORMATION ONLY- NO PUBLIC COMMENT)***			***Initials***	***Originator or Supporter***
		Mayor / Council		
		City Manager	PKK	
		Clerk		
		Treasurer		
		Community Development	BP/ MG	Originator
		Police Department		
		Public Works		
		Golf Course		
COST IMPACT:	N/A	Parks and Recreation		
FUNDING SOURCE:	N/A	Airport		
		Library		
TIMELINE:	N/A	Information Systems		
		Grant Coordinator		

SUMMARY STATEMENT:

This is an application for a Conditional Use Permit, Design Review, and Shoreline Environs Review to expand the Mile High Marina and replace the existing log breakwater with wave attenuator infrastructure and include publicly accessible dock area with approximately 90 additional boat slips.

During the regularly scheduled January 11, 2024 meeting, the McCall City Council conducted a properly noticed public hearing, closed the public hearing, and voted to continue the subject application to the February 8, 2024 meeting. At that time, the Council voted to reopen the public hearing for more information only from the applicant and staff on the subject application but not for additional public comment. Questions were provided by the City Council to the applicant to obtain additional information.

The applicant's answers to the questions asked by Council and supporting documents are attached. Staff also provided comments on the new information.

RECOMMENDED ACTION:

1. Continue the Public Hearing
2. Close the public hearing.
3. Deliberate
4. Direct staff to prepare Findings of Fact, Conclusions of Law, and Decision documents for CUP-23-07 with the recommended conditions of approval and authorize the Mayor to sign all necessary documents.

RECORD OF COUNCIL ACTION

MEETING DATE	***ACTION***
January 11, 2024	Closed public hearing and continued deliberations to February 8, 2024
February 8, 2024	Re-opened and continued public hearing to April 4, 2024

APPLICANT'S RESPONSES TO CITY COUNCIL'S ADDITIONAL QUESTIONS REGARDING CUP 23-07

Mile High Marina, LLC, submits the following responses to the City Council's additional questions regarding the Marina Breakwater/Expansion Application (the "Application"). The Applicant reserves the right to submit additional comments if requested by City Staff or at the April 4, 2024 Meeting.

Question 1: Describe the types and quantities of boats currently utilizing slips at Mile High Marina.

Applicant's Response: Over the period of February 26-March 1, 2024, the Applicant conducted two controlled and comprehensive surveys. One was conducted by Cassidy Templeton, General Manager of the Marina. This survey solicited input from existing Marina moorage customers on six questions. Cassidy was able to poll 140 of the 160 existing moorage customers. The other survey was conducted by Kelly Worley, a co-owner of the Marina who works full time at the Marina during the season and is responsible for slip assignments and maintenance of the Marina's slip waiting list. This survey solicited input from the first 90 persons on the Marina's slip waiting list (the "Marina Waiting List") who would be eligible for new slips on eight questions, some of which were two part questions.

The sworn Declaration of Kelly Worley is attached as **Attachment 1**. Kelly explains the questions which were asked of each of the first 90 persons on the Marina Waiting List who would be eligible for the 90 proposed additional slips. She confirms that she personally spoke with each of the survey respondents and maintained a separate "Tally Sheet" for each respondent's answers. She then prepared an "Overall Tally Sheet", which is attached to her Declaration as Exhibit A. The Overall Tally Sheet provides the answers, by question, of the total group surveyed.

The sworn Declaration of Cassidy Templeton is attached as **Attachment 2**. Like Kelly, Cassidy explains the questions which were asked of the current Marina slip holders. She also confirms that she personally spoke with each of the survey respondents and maintained a separate "Tally Sheet" for each respondent's answers. She also prepared an Overall Tally Sheet which is attached to her Declaration as Exhibit A. The Overall Tally Sheet provides the answers, by question, of the total group surveyed.

The surveys provide valuable information which is responsive to numerous questions posed by the Council. As to Question Nos. 1 and 2, the types of boats currently in the Marina, as well as the types of boats owned by people on the Marina Waiting List, are disclosed in the Overall Tally Sheets.

Additional significant data derived from the surveys includes the following:

a) Of the first 90 people who would be eligible for the new slips, 82 already own boats and use their boat on Payette Lake. 7 of the 8 who reported not owning a boat reported that they are currently using a boat on Payette Lake, but it is owned by family, friends, or a rental company, or they are transitioning from a boat owned in the 2023 season to a new boat. Thus, the survey establishes that at least 82 of the boats which would be occupying the new Marina slips are already using

Payette Lake and are not new boats being added to the Lake.[1]

b) As to Question No. 3, the surveys establish that the extent of boat usage on the Lake by the Marina Waiting List group, who ramp in and out on their days of use of the Lake, did not materially vary from the extent of usage of the Lake by the current Marina slip holders. 56% of the Marina Waiting List group and 51% of the Marina Slip holders reported that they use their boats 11-30 days per year. 60% of the Marina Waiting List group reported that they typically use their boat for 4 hours or less per day of use, with 34% reporting that they use their boat 5-6 hours per day of use (i.e. 94% use their boats 6 hours or less per day of use). 79% of Marina slip holders reported that they typically use their boat for 4 hours or less, with 18% reporting that they use their boat 5-6 hours (i.e. 97% use their boats 6 hours or less per day of use). So, the data suggests that the relative usage, as between the two groups, is comparable. If anything, the Marina Waiting List group use their boats somewhat longer per day of use than do the Marina slip holders.

c) Most of the Marina Waiting List respondents reported that on their days of use of the Lake they park their vehicle and trailer in the upland City lot. Many reported frustration with congestion at the City ramps, which they attributed to domination of the ramps by rental companies.

d) 51% of the Marina slip holders and 43% of the Marina Waiting List group own or have the use of a residence within walking distance of the Marina.

Question 2: Provide information on the types and quantities of boats that could be reasonably expected to be docked at the new slips, either from information collected from the prior survey (which asked the question of what kind of boat), or if not available, sales trends (preferably in Idaho, but nationwide if necessary), or data collected from boater registrations in Idaho, or other sources as available.

Applicant's Response: See Response to Question 1.

Question 3: Please provide any available information about boater miles used, frequency of use, or any metric that provides information on intensity of boat use by slip owners versus non-slip owners, either specifically to this marina, or otherwise.

Applicant's Response: See Response to Question 1.

Question 4: How will additional boat traffic from the expanded marina, and specifically an increase in wake boat traffic, impact the social capacity and carrying capacity for Payette Lake that was discussed in the Valley County Waterways Management Plan.

Applicant's Response: The Valley County Waterways Management Plan (the "**Plan**"), which is attached as **Attachment 4**, reported the following, related to social carrying capacity:

[1] The survey actually establishes that only one of the 90 respondents did not already boat on the Lake. However, the Applicant would prefer to err on the side of *overstating* rather than *understating* the impacts of the proposed expansion. Therefore, for purposes of Applicant's responses to the Council's questions, the Applicant assumes that the Marina expansion will add 8 new boats to the Lake.

a) Over 70% of boaters polled use their boat on the Lake 25 days or less per season;
b) Over 83% of boaters described their overall experience as "excellent"; and,
c) Over 86% of the boaters rated the feeling of crowdedness as moderate to not at all.

The above referenced survey of Marina Waiting List people establishes that, *at most*, only eight (8) of the new slip lessees will be new boaters on the Lake. Adding 8 boats to the Lake will have no measurable impact on the social capacity of the Lake and will certainly not jeopardize the Plan's Keystone Indicator of maintaining at least 75% of boaters reporting that their experience was "excellent".

Carrying Capacity is a complicated concept which ultimately rests on a somewhat subjective decision as to the optimal number of boats per acre on the Lake at any given time. The Plan states that case studies as to carrying capacity suggest a range of 4-40 boats per acre. Observed boats on Payette Lake at one time ranged from 20 boats ("low use") to 76 boats ("high use") on 4,326 usable acres (i.e. excluding no-wake area). This would equate to approximately 1 boat per 216 acres (low use) or 1 boat per 57 acres (high use). The Keystone Indicator in the Plan suggests that the desired future condition for the Lake would be 102 boats at high use. Adding 8 boats to the Lake, even in the very unlikely event that they were all on the Lake at the same time, results in a "high use" number which is still well below this Keystone Indicator.

Question 5: Provide an analysis of the impacts of the proposed expansion on the boat launch and trailer parking area.

Applicant's Response: Based on the survey of Marina Waiting List people, over the course of the boating season approximately 1,300 boat launches and 1,300 boat retrievals will be eliminated from the City ramps and a like number of days of trailer parking in the City Lot will be eliminated. This will obviously reduce congestion at both the ramps and the City lot.[2]

Question 6: Describe the impact of the proposed expansion on surface water quality and non-motorized usage in the vicinity of the marina.

Applicant's Response: Non-motorized usage in the vicinity of the Marina will be enhanced by the Breakwater/Expansion Project. The new Breakwater will provide a southern "anchor" to the McCall Parks and Recreation Department's plan to create a non-motorized use area in the water immediately north of the Marina. The Breakwater is designed to accommodate a dock extending north from the Breakwater/Boardwalk to be dedicated to non-motorized use. In addition, with the expansion, boats exiting the new slips will exit well to the west of the Legacy Park waterfront area, in which much of the current non-motorized use is concentrated. The Marina and the ingress and egress routes from the Marina out onto and returning from the Lake are within an established no-wake zone, which should control any impacts on non-motorized users in terms of boat wakes from boats entering or leaving the Marina, as well as surface water impacts. The reduced use of the City's ramps will also have a positive impact on surface water disturbance associated with boat launches and retrievals. Last but certainly not least, the expansion will introduce, *at most*, 8 new boats to the Lake. Under even the most pessimistic assessment, the impacts on non-motorized use and surface water quality from 8 new boats are far outweighed by the above-noted improved facilities for non-motorized lake users and the reduced ramp and parking activity.

[2] This is based on the actual number of days-of-use reported by each respondent on the Marina Waiting List Survey who use the City ramps.

Question 7: Describe measures proposed to ensure that the proposed expansion will not have a detrimental effect on the health of Payette Lake.

Applicant's Response: As established by the surveys, the Marina expansion will introduce at most 8 new boats onto the Lake. The Responses to these questions and the attached materials provide a firm basis for a finding that the expansion will not have any detrimental impact on the Lake, let alone a "substantial" one[3]. Additionally, the following measures will further assure that the proposed expansion will not have a detrimental impact on the lake:

a) The Marina intends to limit boats placed in the new slips to model year 2010 or newer.[4]

b) The Marina will not allow any 2-stroke engines on boats placed in the new slips.

c) The Marina intends to continue its annual milfoil abatement program.

d) The Marina intends to continue its boater education program, with particular emphasis on the established no-wake zones and the avoidance of shallow water by wake boats.

e) At the suggestion of the City Engineer, the Marina has formalized and updated its Spill Control and Response Plan and has also provided a Spill Response Plan applicable to its underground storage tanks, which was prepared by Christensen, Inc. the Marina's fuel supplier. These Plans were submitted as Supplemental Submittals 3 and 4 and are reattached hereto as **Attachments 9 and 10**. These plans were independently reviewed by Brett Smith, P.E., LG, of Environmental Compliance Associates, LLC, an environmental engineer and exploration geophysicist, who has extensive experience with the drafting and monitoring of Spill Prevention and Control Plans. Mr. Smith's Resume and Review Letter were Supplemental Submittals 5 and 6 to the Application and are reattached hereto as **Attachments 11 and 12**. Mr. Smith's opinion is that "my review finds the above-referenced documents to adequately provide legible and understandable spill response measures and a listing of the equipment needed to effectively and promptly contain any fuel spills that may occur during UST-filling or during watercraft refueling at the marina-based dispenser. Provided that Facility personnel understand and diligently follow the above-referenced spill response documents, the water quality of Payette Lake is being responsibly protected by the Mile High Marina."

f) In response to a request made by a member of the Big Payette Water Quality Council, rubber splash guards that would be compatible with the Marina's fuel dispensers have been ordered and will be in-use this coming season.

Question 8: Describe the pollution created and associated impacts on air and water quality from the proposed expansion.

Applicant's Response: As established by the Surveys, the Marina expansion will introduce at most 8 new boats onto the Lake. The Responses to these questions and the attached materials provide a firm basis for a finding that the expansion will not introduce any detectable contaminants or pollutants into the Lake.

A. **Water Quality**:

1. **The materials which will be used**: In response to a question posed by a member of the Big Payette Lake Water Quality Council, Applicant asked the Supplier and likely

[3] The relevant standard in the City Code is that the use not cause any "substantially harmful environmental consequences to any land or waters within the planning jurisdiction." M.C.C. 3.13.03 (B),5.

[4] Effective with 2010 models, the E.P.A. imposed stringent emission controls of recreational watercraft. See Response to Question 8.

contractor for the breakwater/dock installation (Kropf Industrial) to comment on the materials which will be used in the project and the maintenance protocol, from a water quality perspective. His response to Sam Worley was submitted as Supplemental Submittal 11 and is reattached as **Attachment 17**. It includes the following information:

a) Floatation: The steel pipe floatation does not contain any foam, so there's no risk of plastics/foams escaping even in a catastrophic event.

b) Treated wood: The only wood in the system is installed above the water line, and is treated with a process (Micro Pro Sienna) that's approved for use in playgrounds, etc.

c) Epoxy coating: The Amerlock 2 epoxy is approved for use in potable water systems (see Data Sheet attached).

d) There's nothing involved in the maintenance or servicing of the dock that would introduce chemicals or toxic substances.

2. **The removal of the log boom and construction of the new breakwater**:

In response to an issue identified by the Big Payette Water Quality Council, the Applicant commissioned an evaluation by the McMillen Company of the potential impacts on water quality, in particular the City Water Intake line, from the removal of the existing log boom and the construction of the new wave attenuator breakwater. The McMillen Company Bio, as well as those of the two principals who worked on the Evaluation, were submitted as Supplemental Submittals 7, 8 and 9. They are reattached as **Attachments 13, 14 and 15**. The McMillen Company's Technical Memorandum was submitted as Supplemental Submittal 10. It is reattached as **Attachment 16**. McMillen Company's conclusions included the following:

a) No disturbances are anticipated to the Lake bottom associated with the removal of the existing log boom.

b) The City's intake line sits at a depth of 73.6-93.6 feet, depending on Lake levels.

c) At its closest point, the Marina will be 352 feet from the intake.

d) The new concrete blocks will be placed on the lakebed, rather than "keyed into" the lakebed.

e) The littoral range of the Lake (i.e. the shallow shelf nearest the shoreline) is typically subject to more lake motion and turbidity. The intake is 550 feet beyond the littoral range.

f) It is anticipated that "resuspended sediment concentration" at the intake during the placement of the concrete block will not exceed naturally occurring suspended sediments.

g) The risk of damage to the intake line is "extremely low" due to the separation between the nearest concrete anchor and the line.

3. **The 8 new boats**:

a) The City's Water Quality Reports: **Attachment 6** contains the City's Water Quality Reports for the years 2011-2022. The Reports contain information which is directly responsive to this Question. The City tests for four chemicals found in gasoline, which are benzene, toluene, ethylbenzene and xylenes (collectively referred to below as "BTEX"), which have never been detected in the City's drinking water since 2011. The City also tests for turbidity. The Applicant commissioned engineer Brett Smith to review and comment on these Reports, relative to this Question. His Report and conclusions are contained in his March 8, 2024 letter to the Applicant, which is attached as **Attachment 18**. His Conclusions include the

following:

i. Given the relatively significant depth and distance from the City's WTP intake, the findings of two separate and independent studies showing no disturbances within the upper 15 feet of a lake's water column, the existence of an established No-wake Zone within the lake surface over the intake and the fact that BTEX COCs preferentially float, it is highly unlikely that BTEX pollution will ever reach the City's WTP intake.

ii. All WQ Reports revealed Turbidities well below the 1 NTU Maximum Contaminant Level (MCL), with considerably lower NTU values detected during 2021 and 2022. Given the relatively significant depth and distance of the City's WTP intake to the Mile High Marina; findings from two separate and independent studies showing no disturbances within the upper 6.5 to 15 feet of the lake's water column and the existence of an established No-wake Zone over the intake, it is extremely unlikely that full-speed (let alone idling) watercraft will contribute anything to the naturally occurring turbidity at the lake bottom or by the intake.

iii. Given the Findings and Conclusions addressed in this letter, it is highly unlikely that the proposed 90-slip expansion for the Mile High Marina will significantly pollute Payette Lake bottom water with BTEX COCs and it is even more unlikely that (idling or even full-speed) watercraft will contribute any additional turbidity to the lake bottom water surrounding the City's WTP intake.

It is noteworthy that, since 2011, no BTEX chemicals have been detected at the City's Treatment Plant despite the fact that, over the same period of time, the number of recreational watercrafts using the Lake has significantly increased. It is also noteworthy that, since 2011, the turbidity levels in the City's drinking water have significantly decreased, despite the fact that the numbers of wake boats on the Lake has significantly increased.

b) Other Data Regarding Turbidity: The Valley County Waterways Plan addresses the issue of turbidity potentially caused by recreational watercraft. It notes that "studies have shown that minimal lakebed disturbance occurs from boats at depths greater than 9 feet in fine sand beds and 15 feet in silt bed lakes. Therefore, adding no-wake zones in areas with depths of less than 10 feet would reduce the "resuspension" of bottom sediments and subsequent nutrient loading." It also correctly recognizes that a study referred to as the "Fay Wake Surfing Study" reaches the same conclusion and recommends at least a 200 foot no-wake zone.[5] Valley County imposes a 300 foot no-wake zone on Payette Lake.[6] In addition, the exit from the new slips will be at a depth of 45-60 feet.

c) Air quality: The E.P.A. adopted stringent emission controls for marine spark-ignition engines and vessels in 2010 which cover both the engines and the fuel systems. At

[5] See *Numerical Study of the Impact of Wake Surfing on Inland Bodies of Water,* 2022, which is attached as **Attachment 3**.
[6] Valley County Code, 4-5-6(D).

the time, the Agency estimated that "When fully implemented, the new standards will result in an estimated 70 percent reduction in HC+NOx emissions and a 50 percent reduction in CO from new SD/I engines' exhaust. The standards will also result in a 60 percent reduction in HC+NOx emissions from OB/PWC engines. The new standards will reduce evaporative emissions by about 70 percent."[7] Indeed, the Agency's projections were not overly optimistic as to recreational watercraft. Since 2010, there has been a 90% reduction in marine engine emissions with a corresponding 40% increase in fuel efficiency.[8] Recreational watercraft now account for only .7% (i.e. .007) of U.S. Transportation Greenhouse Emissions.[9] Greenhouse gas emissions are further discussed in the Response to Question 9.

Question 9: Provide a greenhouse gas emissions inventory of the proposed expansion utilizing the methodology established in the *Corporate Accounting and Reporting Standard, Revised Edition*.

Applicant's Response: This has proven to be a very difficult question to answer with any certainty, due in no small part to the lack of available data. The above-referenced methodology would require accurate data as to the total gallons of fuel likely to be used annually by the 8 new boats which it is assumed for purposes of these Responses will be brought to the Lake by the Marina expansion. While accurate data is available as to the total gallons of fuel which is dispensed annually by the Marina's fuel dispensing station, that fuel is consumed by many lake users other than the Marina slip holders. A review of the Valley County GIS Parcel Map and associated aerial photography suggests that there are approximately 609 lakefront parcels on the Lake and more than 344 additional slips in other marinas on the Lake. Although not every lakefront parcel has a dock, the vast majority do and many, if not most, of the single-family docks accommodate more than one boat. Thus, any greenhouse gas inventory of the proposed expansion must, by necessity, rely on industry-wide or federal nationwide estimates of fuel consumption, rather than actual data.

With these challenges in mind, the Applicant retained Ryan Eldridge, P.E., of Water, Civil and Environmental, Inc. to assist in preparing an inventory. Mr. Eldridge's Report is attached as **Attachment 19**. In his calculations, *with the Applicant's concurrence*, Mr. Eldridge erred on the side of *overstating* rather than *understating* the extent of the greenhouse gas which might be produced by the 8 new boats. For example, although the Federal Highway Administration estimates that gas-powered watercraft use between .88 and 2.31 gallons per hour of fuel, Mr. Eldridge inflated the top end of that range and assumed that the 8 new boats in the Marina would consume 3 gallons per hour, an increase of 30% over the high end of the Highway Administration's estimate. Similarly, although Mr. Eldridge concluded that the average annual hours of usage of boats referenced in the Marina surveys was approximately 111.5 hours, for purposes of his calculations he assumed 120 hours of annual usage. Moreover, the resulting calculation further assumes that the boat is running for 100% of the time that it is on the Lake,

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[7] See **Attachment 5**, at page 3.

[8] U.S. EPA MOVES Database and Phase-Out of Conventional Carbureted Two-Stroke Engines in 2010 40CFR Part 1045 'Control of Emissions from Spark-Ignition Propulsion Marine Engines and Vessels';
Phase out of conventional carbureted two-stroke outboard engines and implementation of direct fuel injection two-stroke and four-stroke marine engines.

[9] US EPA Greenhouse Gas Explorer CSV File Download 1990–2020, Greenhouse gas emissions from ships and boats in the United States https://cfpub.epa.gov/ghgdata/inventoryexplorer/#allsectors/allsectors/allgas/econsect/all; See also **Attachment 7** hereto.

which is certainly not the case with many boaters. Using these assumptions, Mr. Eldridge concludes that the 8 new boats will consume 2,880 gallons of fuel per year, and would, therefore, produce 27 metric tons of GHG. He notes that this equates to approximately 7 automobiles and would represent less than a 3% increase in GHG associated with the total Marina annual fuel sales. Mr. Eldridge states that this estimate is "very conservative and most likely contains a significant safety factor." Indeed, if the actual average hours per season of use Mr. Eldridge discerned from the Marina surveys (111.5) and the high end of the Federal Highway Administration's estimate of gallons of fuel used per hour by gas powered watercraft (2.31 gph) are inserted into Mr. Eldridge's calculations, then the projected total GHG produced by the 8 boats is approximately 18 metric tons, instead of 27 metric tons, which is equivalent to 4 automobiles. And, if the low end of the Federal Highway Administration's estimate of gallons per hour of fuel used by gas powered boats is inserted into the calculation (.88 gallons per hour) the resulting projection is 7 metric tons, equivalent to 1.5 automobiles.

Yet another method of calculating the GHG which might be produced by the 8 new boats at the Marina is displayed in **Attachment 20**, which calculates the GHG which might be produced by the 8 boats by using existing data on the total number of boats in the U.S., Idaho and the Marina and the total reported metric tons of GHG associated with those types of boats, prorated by the numbers of boats. Using this methodology the projected GHG from the 8 boats is just under 6 metric tons, or the equivalent of 1.3 automobiles.

This discussion in no way is intended to cast any aspersions whatsoever on Mr. Eldridge's calculations, but rather to point out, as did Mr. Eldridge, that his projection "contains a significant safety factor" and that, with the available data, this is not an exact science.

Perhaps most importantly, as is explained in the Response to Question 17, the Applicant intends to purchase carbon offset credits from a reputable carbon credit bank sufficient to render the 8 new boats carbon neutral.

Question 10: There was a discussion regarding measures that the Marina currently does to contain/minimize milfoil invasion. Please provide information on what the current methods are, whether and/or how those methods will be extended to the proposed expanded marina.

Applicant's Response: The current program involves a diver annually hand pulling any milfoil which is discovered within the Marina footprint. Yes, the program will be extended to the expanded footprint, although, based on the depth of the water in the expansion area, it is anticipated that very little milfoil will be present.

Question 11: Provide the last 10 years, if available, of turbidity data, particularly for data collected in locations around the water intake pipe, the marina, legacy park, or in the general vicinity. There were some recent turbidity violations that were reported. If the reason for the increased turbidity is known to a reasonable degree of certainty, please provide that information (no speculation).

Applicant's Response: The only turbidity testing of which the Applicant is aware is done at the City's Water Treatment Plant. Those Reports are provided in **Attachment 6**. Those Reports establish that, since 2011, there have been no turbidity violations and, in fact, turbidity is significantly trending downward since 2011.

Question 12: With respect to turbidity, provide information of how more boats, and in particular

wake boats, leaving the marina may disturb near-shore sediment.

Applicant's Response: See Response to Question 8.

Question 13: Public comment stated that there are newer wake boats capable of 6' waves, and that have a fuel system that expels exhaust under water rather than in the air. It would not be unreasonable to assume such newer wakes boats may be docked in the expanded marina initially, or as the newer boats become more prevalent. (I don't know how new these boats are.) Provide information regarding the new fuel injection system for wake boats and any information about how far out and in the water column such exhaust may impact water quality for drinking, and also water quality for swimming. In other words, can drinking water quality as well as water quality at Legacy Park, Brown Park, and in the vicinity of the marina be impacted for swimmers and non-motorized users?

Applicant's Response: The Applicant's research suggests that the reference to 6 feet is to the length of the wave, rather than the height. As to the balance of the Question, see Responses to Questions 8 and 9.

Question 14: There was discussion in the public hearing about parking, and that parking congestion might be alleviated because the boat owners with slips will not have to park trailers to boat. However, now there are 90 boats that are associated with 90 cars that will come to access their boats. Provide further information or analysis on how the project intends to address additional parking that would be needed to accommodate the slip renters.

Applicant's Response: The Question seems to suggest that the expansion will bring 90 new boats to the lake. As the Marina Surveys discussed in Response to Question 1 establishes, at most 8 new boats will be introduced to the Lake as a result of the expansion. See Responses to Questions 1 and 5.

Question 15: If boat slip renters now will not need to find parking spaces large enough for their trailers, then can park in smaller spaces that are further from the marina. How will the lack of parking impact parking that is designed significantly for non-boat users of Legacy Park?

Applicant's Response: As is established by the Marina Surveys, there will be at most 8 new boat owners seeking parking on a day of the year of which all 8 boats are being used at the same time. In contrast, the expansion will eliminate 1,300 occasions in which a current Marina Waiting List person is parking their trailer in the City Lot. Given these facts, there is simply no basis to conclude that any Legacy Park parking will be displaced.

Question 16: Clarify the ADA accessible parking spaces – number and location.

Applicant's Response: There are two ADA parking spaces. One is located directly in front of the Marina. The other is directly across the street.

Question 17: Provide information in the context of how the proposed expansion is consistent with/supports, or is inconsistent with, the City's adopted Greenhouse Gas Emissions Inventory and Framework for Climate Action Planning.

Applicant's Response: Although the Applicant believes that the actual GHG produced by the 8 new boats will be less than 27 metric tons (see discussion in Response to Question 9), the Applicant intends to purchase carbon offset credits from a reputable carbon credit bank sufficient to render the 8 new boats carbon neutral, assuming that they will produce 27 metric tons of GHG. The Applicant is in the process of developing the specifics of this plan and will supplement this

Response when the plan is finalized. In addition, the Applicant will require that boats placed in the new slips be not older than a 2010 model year and will not allow any boats with 2 stroke motors to occupy any of the new slips. Lastly, The Marina has already implemented or will implement the Marina Green Practices identified in **Attachment 21**.

Question 18: Is the applicant willing to have conditions on the permit for the 90 new slips, that would prohibit:

a) Commercial renters
b) Subletting of slips
c) Wake boats from renting
d) Any single party from renting more than one slip?

Applicant's Response:

a) Commercial renters-Yes. The Applicant's understanding of the term "commercial renters" is a renter using the slip to generate income.
b) Subletting of slips-Yes.
c) Wake boats from renting-No (Note that only 23% of the first 90 persons on the Marina Waiting List own a wake boat).
d) Any single party from renting more than one slip? Yes.

ATTACHMENT 1

DECLARATION OF KELLY WORLEY

STATE OF IDAHO)
) ss
County of Valley)

I, Kelly Worley, having been duly sworn upon oath, depose and state as follows:

1. My husband, Sam Worley, and I are owners of the Mile High Marina.
2. I work at the Marina full time during the months it is open.
3. Part of my responsibilities include assigning boats to the Marina's slips and working with slip renters.
4. The Marina maintains a waiting list of persons seeking a slip, which is used to fill slips that open up.
5. Over the period of February 26-March 1, 2024, I surveyed people on our waiting list and asked each person surveyed the following questions:
    a) Do you own a boat?
    b) What is the year, type and model?
    c) Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?
    d) Do you currently use you boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?
    e) Do you currently use the boat in any other water bodies? Which ones?
    f) How many days would you estimate you used your boat in Payette Lake during the 2023 season?
    g) On days of use, typically how many hours did you spend on the Lake?
    h) On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?

6. I prepared a separate tally sheet for each person surveyed, on which I entered the responses of that person to each of the eight questions listed above. After completing the survey, I then prepared an overall tally sheet on which the responses of all 90 of the respondents are accounted for.

7. Attached as Exhibit A is my overall tally sheet of the responses of the first 90 people who would be eligible for slips if additional slips at the Marina become available.

VERIFICATION

I, Kelly Worley, declare under penalty of perjury pursuant to the laws of the State of Idaho that I have read the foregoing and acknowledge that the contents therein are true and correct to the best of my knowledge and belief.

Dated this 2 day of March, 2024.

Kelly Worley

KELLY WORLEY

EXHIBIT A
MILE HIGH MARINA
WAITLIST SURVEY

1. *Do you own a boat?* Yes: 82/90, No: 8/90. Those that didn't own boats intended to purchase either a Pontoon boat (6), or a smaller runabout ski boat (2). All 90 people surveyed (with the exception of 1) were currently using the lake by way of their own boat, rentals, family or friend boats, or transitioning to a different boat. Only 1 person surveyed was brand new to the area and was not currently using the lake at all.

2. *What is the year, type, and model of boat?* Pontoon Boats: 23/90, Runabout Ski/or Classic Wooden Boats: 37/90, Surf Boats with ballast system: 21/90, Aluminum Fishing Boats: 9/90. Out of 90 surveys this was the breakdown by boat type, including the 8 future purchases.

3. *Do you own or have ready access to a residence in Valley County?* Yes: 84/90, No: 6/90. 5/6 responding No, rent regularly in Valley County at Shore Lodge or Airbnb.

4. *If so, is the property within walking distance to the marina?* Yes: 39/90, No: 51/90.

5. *Do you currently use your boat on Payette Lake?* Yes: 82/90, No: 8/90. Those that reported No were currently using rental boats, etc. See question 1, for more detail.

6. *Which ramp do you use when you boat on Payette Lake?* City ramp next to marina: 69, Ponderosa ramp: 7, Both city and Ponderosa ramps: 14.

7. *Do you currently use the boat on other bodies of water? If yes, which Lakes?* Yes: 28. Cascade, Priest, Lucky Peak, Delta, Montana lakes, and others.

8. *How many days would you estimate you used your boat on Payette Lake during the 2023 season?* 0-10 days: 28, 11-20 days: 36, 21-30 days: 10, 31-40 days: 4, 41-50 days: 4.

9. *On days of use, typically how many hours did you spend on the Lake?* 2-4 hours: 49, 4-6 hours: 28, 6-8 hours: 9.

10. *On days of use, typically where do you park your vehicle and trailer?* Most people reported trying to use the City Lot but several would go to Ponderosa when the City Lot was full. Several mentioned street parking. There seemed to be a common frustration of other rental agencies clogging up the boat ramp and City Lot with their rental trailers and equipment.

11. *Have you ever been unable to find a parking spot in the City Lot upland of the Marina?* Yes: 52. Many were not applicable because they used private property parking and would either walk or bike down to the marina or drive ATV.

12. *If so, how frequently does this occur?* Majority of people responded 50% of the time. Some reported 25%, and other reported 75%. Many have park passes to Ponderosa and use that parking lot when City Lot is full. Others reported using the City Lot early morning or late afternoon was beneficial.

ATTACHMENT 2

DECLARATION OF CASSIDY TEMPLETON

STATE OF IDAHO)
) ss
County of Valley)

I, Cassidy Templeton, having been duly sworn upon oath, depose and state as follows:

1. I am General Manager of the Mile High Marina.
2. I have held this position for three years.
3. Over the period of February 22, 2024-March 1, 2024, I was able to make contact with 140 of the approximately 160 current Marina slip renters, and I asked each person with who I made contact the following questions:

   a) What is the year, type and model of your boat?
   b) Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?
   c) Typically, when do you put your boat in the Lake?
   d) Typically, when do you remove your boat from the Lake at the end of the season?
   e) How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?
   f) On days of use, typically how many hours did you spend out on the Lake?

4. I prepared a separate tally sheet for each person surveyed, on which I entered the responses of that person to each of the six questions listed above. After completing the survey, I then prepared an overall tally sheet on which the responses of all 140 respondents are accounted for.
7. Attached as Exhibit A is my overall tally sheet of the responses of the 140 current Marina slip renters who I was able to contact.

VERIFICATION

I, Cassidy Templeton, declare under penalty of perjury pursuant to the laws of the State of Idaho that I have read the foregoing and acknowledge that the contents therein are true and correct to the best of my knowledge and belief.

Dated this 4 day of March, 2024.

Cassidy Templeton
CASSIDY TEMPLETON

EXHIBIT A
Mile High Marina
Slip Customer Survey Results

1. What is the year, type and model of your boat?
   - There are 2 Cabin Cruisers, 1 Deck boat, 1 Fishing boat, 1 Jet boat, 50 Pontoon boats, 32 Runabout boats, 3 Sailboats, 10 Ski boats and 63 Surf boats.
2. Do you own or have ready access to a residence in Valley County? If so, is it within walking distance from the Maina?
   - 137 own a residence, 3 do not own a residence
   - Of the 137 that own a residence, 71 are within walking distance from the Marina
3. Typically, when do you out your boat in the lake?
   - 90 put their boat in by Memorial Day
   - 21 put their boat in by early June
   - 13 put their boat in by mid June
   - 9 put their boat in by the end of June
   - 4 put their boat in by early July
   - 3 put their boat in my mid July
4. Typically, when do you remove your boat from the lake?
   - 2 take their boat out by the end of August
   - 23 take their boat out around Labor Day
   - 29 take their boat out by mid September
   - 49 take their boat out by the end of September
   - 37 take their boat out in October
5. How many days would you estimate you used your boat on Payette Lake during the 2023 season?
   - 24 used their boat 0-10 times
   - 46 used their boat 11-20 times
   - 25 used their boat 21-30 times
   - 17 used their boat 31-40 times
   - 18 used their boat 41-60 times
   - 3 used their boat 61-99 times
   - 7 used their boat 100+ times
6. On days of use, typically how many hours did you spend out on the Lake?
   - 29 used their boat 0-2 hours
   - 81 used their boat 3-4 hours
   - 25 used their boat 5-6 hours
   - 5 used their boat 7-8 hours

ATTACHMENT 3

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Numerical Study of the Impact of Wake Surfing on Inland Bodies of Water

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Abstract

In many areas around the world, wake surfing has been cited as one of the major causes of lakeshore erosion and turbidity. This paper quantifies the impact related to turbidity and erosion with the use of computational fluid dynamics (CFD) of boat wakes in shallow water and the build-up of wind driven waves. The energy, type and direction of the boat's wake are described quantitatively and a table for predicting wind driven waves over varying fetches, depth and wind speeds is provided. The CFD simulation shows that if a wake surf boat is operated 200 ft from shore and in at least 10 ft of water, the environmental impact is minimal.

Keywords

CFD, Erosion, Waves, Wakes, Wind Driven Waves

1. Introduction

Wake surfing is a water sport in which a surfer rides a boat generated wake without the need for a direct connection to the boat. This contrasts with water skiing and wake boarding, which require the use of a tow rope to pull the rider. Wake surfing has rapidly gained popularity over the last few decades, causing the watercraft industry to introduce hulls specifically designed to optimize the wake shape and size for surfing. Typically, this is done by adding ballast such as water tanks to the back of the hull and utilizing special tabs to change the hull orientation. Wake surf boat operation can be segregated into two modes: surf mode and planning mode. Surf mode uses the ballast and/or tabs to create a wake capable of pulling a surfer without need of a tow rope (see Figure 1). Typical speeds range from 10 - 13 mph. Planning mode, defined further in Section 2,

is a more efficient mode of operation for travelling longer distances and is the most widely used mode of operation for power boats. Typical planning speeds for recreational craft range from 20 to 60 mph.

Due to the increased frequency of wake surf boat activity in recent years, users and residents of inland bodies of water have raised the question of whether wake surfing is detrimental to the shoreline and bottom. The purpose of this study is to examine the actual impact of wake surf boats on the shoreline and water bottom using computational fluid dynamics (CFD).

CFD utilizes high performance computing to numerically solve the equations governing fluid flow. It has gained popularity in the marine industry for product development over the last 20 years due to the increasing availability of reasonably priced computing power. Many studies have been performed to validate CFD results and prove their usefulness for predicting real world performance. A well-known example for non-planning hulls such as large container ships is the 2016 Lloyd Register blind CFD workshop. Participants using various software packages were not allowed access to test results ahead of time, and all simulation results predicted speed within 4% of test data. The 2018 Multi Agency Craft Conference (MACC) generic prismatic planning hull (GPPH) simulation grand challenge is another case specific to planning hulls with a similar match between CFD and test data. Additionally, CFD has broad ranging applications in other fields such as the aerospace, automotive, and process industries.

This study starts with a discussion of linear wave theory and the wave generation power of different boat types. Then, CFD simulations using the OpenFOAM solver are performed on a popular wake surf boat to compare the impact of vessel weight, vessel speed, water depth, and distance from shore on wake propagation. Simulations are additionally performed using Siemens Star-CCM+ to solve for the interaction of wake surf boat propeller wash with various bottom depths. Finally, waves generated by the wind for various lake sizes and wind speeds are discussed and a CFD simulation is performed for validation. The purpose of the research is to accurately model the wake behind a planning craft and how it dissipates over time and distance.

Figure 1. Typical wake boat in surf mode.

2. Boat Generated Waves

The wake behind a boat is a combination of a group of wave patterns that combine into one train behind the craft. Figure 2 shows an aerial view of the typical wake of a high-speed planning craft. The energy applied to the water includes a viscous effect that generates heat through hull friction and an inertial effect that generates the group of waves on the free surface of the water. The energy in the water is proportional to the power provided to the propeller. The general dimensions of power into the water are the vessels' resistance times the speed. The resistance components are frictional resistance and wave making resistance. The frictional resistance is the viscous effect of the water running over the surface of the boat. The drag generates a boundary layer that builds based on the length and speed of the boat. The wave making resistance is the remainder of the resistance that the propeller must overcome to allow the boat to travel at a particular speed.

The type of boat has an impact based on the normal operating speed of the boat. A small sailboat, kayak or canoe generates little or no wake because of the size of the boat as well as speed. These small boats are running at their hull speed or below depending on the wind speed or person paddling. The hull speed is generally estimated as the square root of the waterline length of the craft in nautical miles per hour. For statute miles per hour, we can multiply by 1.15. For example, a twelve-foot canoe has a hull speed of 3.5 knots or 4 miles per hour (mph). In the case of a 23-foot wake boat with a waterline length of 19.5 feet, the hull speed is 5 miles per hour. In a displacement type of hull, the hull will sink into the water as the speed increases. In the case of a large ship, the resistance increases dramatically at this speed and makes it economically impossible to go any faster than hull speed.

In the case of the motorboat, the hull has been designed as a planning craft that is able to plane on the surface of the water much like a waterski on the surface of the water. The boat has the power available to go beyond hull speed and begin to

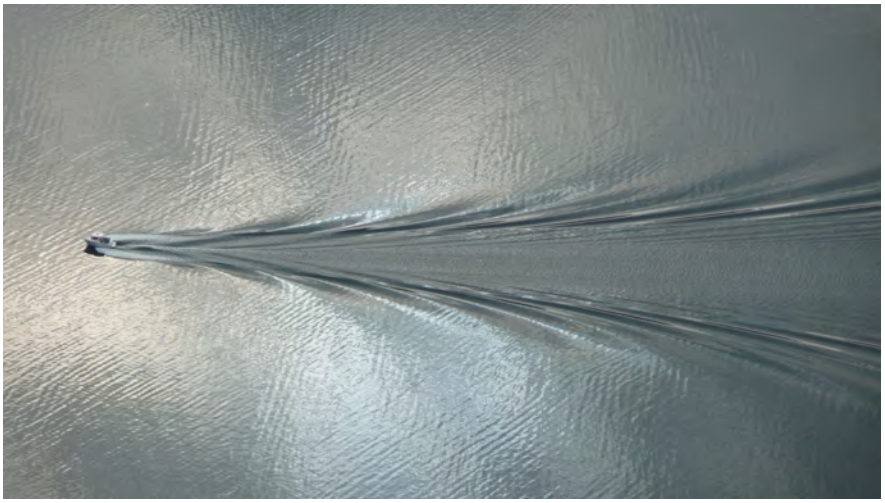

Figure 2. Typical wave pattern of a planning craft.

plane where the center of gravity will begin to rise. The term is generally noted as semi-displacement speeds and finally planning speeds. The planning speed is generally defined as the point where the center of gravity is finally passed above the vertical center when the boat is at rest and the hull is supported by the hydrodynamic lift of the hull running over the surface of the water. The Froude number for planning craft is generally taken as the following.

$$F_{\nabla} = \frac{V}{\sqrt{g\nabla^{\frac{1}{3}}}} \tag{1}$$

where:

V: Speed in feet per second;

g: acceleration due to gravity = 32.17 feet/sec^2;

∇ : Volumetric Displacement = cubic feet.

The transition to planning speeds is estimated at a volumetric Froude number of 2. For a wake boat at a displacement of 7100 pounds, the full planning speed is 25 feet per second or 17 mph (27 kph). At speeds below 17 mph, the boat is semi-planning and is partially supported by buoyancy. The normal wake surfing speed is 12 mph (19.3 kph) which is midway between the displacement speed and planning speed with a Froude number of 1.41. The total power applied to the water is the engine power absorbed by the propeller. The wake of the propeller generates the thrust needed to propel the boat and overcome the resistance generated by the frictional and wave making components. The propeller efficiency is proportional to the thrust times speed divided by the torque times engine RPM. The thrust from the propeller is equal to the resistance of the boat plus a thrust deduction to overcome the added resistance caused by the high velocity water off the propeller that strikes the rudder and reduces the pressure under the hull increasing the trim of the boat. The thrust deduction is generally estimated at ten percent so the required propeller thrust can be estimated at approximately 110% of the estimated resistance of the boat.

The wave making resistance is proportional to the weight of the boat and the running trim angle. The applied force to the surface of the water is estimated by the following equation [1].

$$F_w = \Delta \tan(\tau) \tag{2}$$

where:

F_w: force applied to the free surface;

Δ: boats displacement in lbf;

τ: running trim angle at speed.

Figure 3 shows the boats' resistance curves in the free running and ballast conditions.

The free running displacement is estimated at 5500 lbs and the ballast conditions are estimated at 7100 lbs and 10,500 lbs. The data is assumed to represent an average wake boat operating in North America. The condition of interest is

the wake surfing condition at 12 mph in the ballasted conditions to represent the largest wake developed by this type of craft. The speed versus engine RPM is shown in Figure 4 and the engine power is shown in Figure 5. The energy in the wake is a combination of the kinetic and potential energy components.

The results of the ballasted condition at 7200 lbs (3264 kg) are:

Vessel Speed 12 mph (19.3 kph);

Total Resistance 1510 lbf (6.72 kN);

Engine RPM 2410;

Engine Power 104 horsepower (77.6 kW);

Overall Efficiency 46.5% (Propeller is cavitating badly).

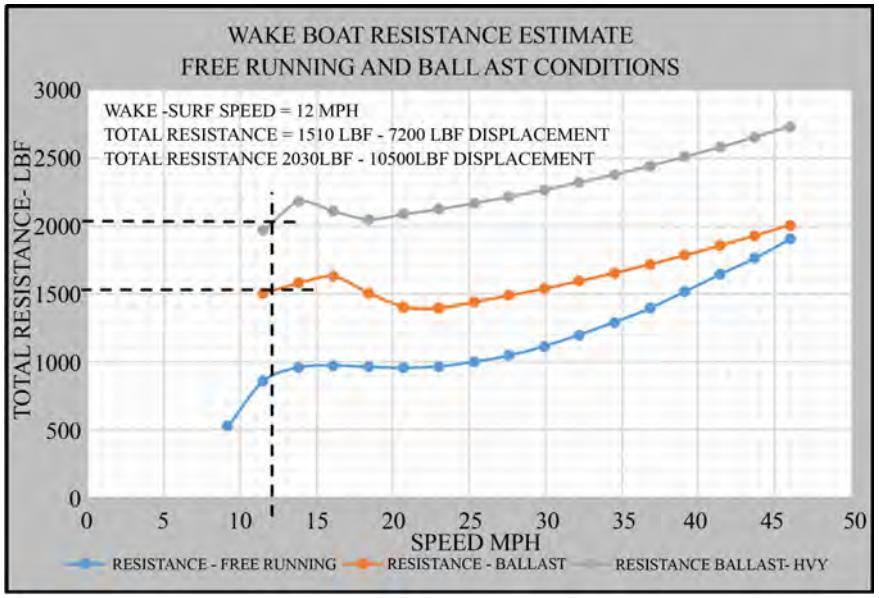

Figure 3. Wake boat resistance estimate.

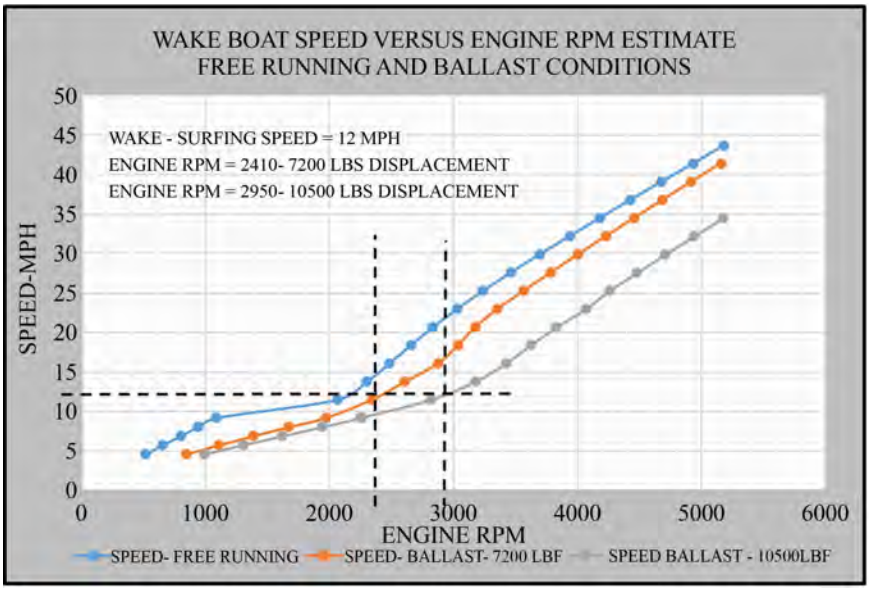

Figure 4. Speed versus engine RPM for a typical wake boat.

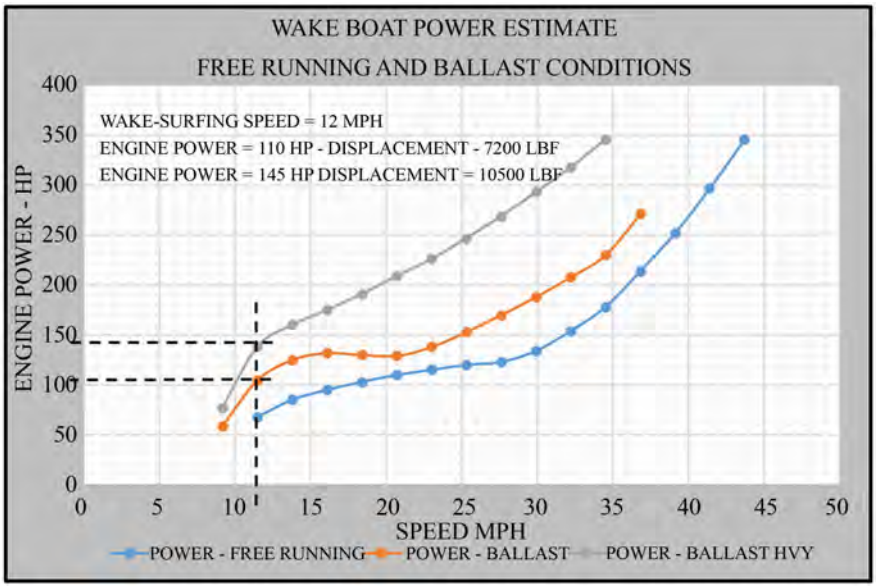

Figure 5. Engine power versus speed for a typical wake boat.

The wave making resistance can be estimated by subtracting the frictional resistance, appendage and wind drag. We can assume the wind drag is small compared to the overall resistance at 12 mph. The appendage drag is approximately 32 lbf and the frictional resistance is estimated at 87 lbf (387 N) with a frictional coefficient of 2.625 (10^{-3}) and a wetted surface of 117 ft^2. The result is the wave making resistance is 1391 lbf at 12 mph (17.62 ft/sec).

If we take the wave making resistance figure and multiply it by the speed of the boat we can estimate the power input into the development of the wave field following the boat. The wave making power in ft-lbf/sec is 24,509 ft-lbf/sec or 33.23 kW or 33,230 joules per second.

The results of the ballasted condition at 10,500 lbs (4760 kg) are:

Vessel Speed 12 mph (17.3 kph);

Total Resistance 2030 lbf (9.03 kN);

Engine RPM 2950;

Engine Power 145 horsepower (108.2 kW);

Overall Efficiency 44.8% (Propeller is cavitating badly).

The wave train behind the boat is travelling at the same speed of boat assuming the boat is travelling at a constant speed. The wave train shows an angle behind the boat with a series of waves traveling at an angle of 19 degrees off the line of travel or an included angle of 38 degrees. The waves are a group of disturbances from the boat's disruption of the free surface. The waves are dispersive meaning they are a series of waves emanating from a single source.

Figure 2 shows an aerial view of a planning craft running at approximately 30 mph. The waves are described as gravity waves and are travelling at the speed of the boat appearing that they are attached to the boat. The appearance of the "V" shaped angle is related to the phase velocity and group velocity of the waves following behind the boat. The "V" shape is described as the Kelvin Wedge. The

angled layout is shown in Figure 6 with each leg at an angle of 19.4 degrees [2]. The wave crests are set at an angle to the line of travel at approximately 35.3 degrees. The velocity of the crest relative to the speed of the boat is:

$$c = V\cos(\theta) \tag{3}$$

where

c: phase velocity, ft/sec;

θ: Wave angle to line of travel = 35.3 degrees;

V: Boat speed, ft/sec.

The phase velocity is the speed of the crest of the largest or dominant wavelength and has a speed of 0.816 (V). The wavelength of the gravity wave in deep water is:

$$L_c = 2\pi\frac{c^2}{g} \tag{4}$$

where

L_c: wavelength of the dominant wave on the crest of the wake;

g: acceleration due to gravity.

The group velocity of the wave train because of the range of wavelengths that make up the full wake is equal to one-half of the phase velocity in deep water. The definition of deep water is dependent on speed. As the depth is reduced for a particular wave train the group velocity will approach the phase velocity causing the waves to bunch up and begin to break at the crest.

The estimate for the group velocity in shallow water can be estimated based on the following equation. The factor (n) will be used to determine the energy in a wave train for comparison to typical waves generated by wind.

$$n = \frac{U}{c} = \frac{1}{2}\left[1 + \frac{4\pi\frac{h}{L_c}}{\sinh\left(\frac{4\pi h}{L_c}\right)}\right] \tag{5}$$

where

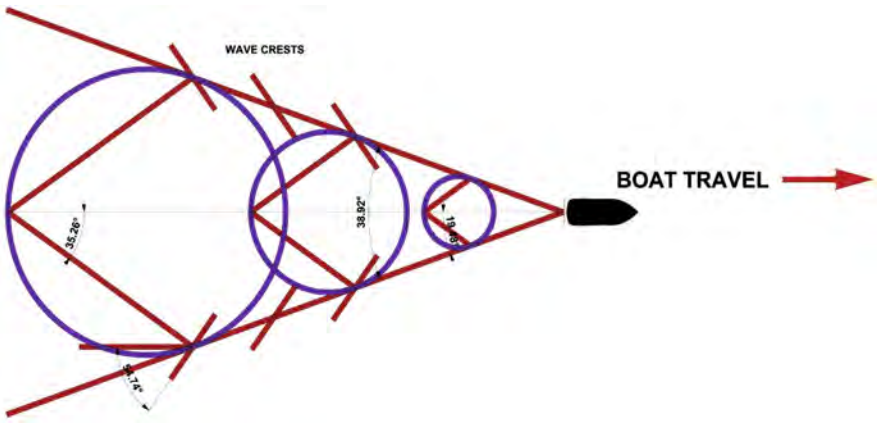

Figure 6. Kelvin wave boundary.

n: Velocity factor;

U: Wave group velocity, ft/sec;

c: Phase velocity, ft/sec;

h: Water depth, feet.

The velocity factor with the boat wake surfing at 12 mph at different depths is shown in Table 1. The phase velocity is the cosine of 35.4 degrees times the vessel speed of 17.62 feet per second or 14.37 ft/sec. The group velocity in deep water is 7.19 feet per second.

The wave energy can be estimated by the following equation for a standard gravity wave.

$$E = E_k + E_p \tag{6}$$

where:

E_k: waves kinetic energy;

E_p: wave potential energy.

The wave running in deep water ignoring dissipation of the wave energy the kinetic energy equals the potential energy and can be estimated based on the following equation.

$$E = E_k + E_p = \frac{\rho g H^2 L_c}{16} + \frac{\rho g H^2 L_c}{16} = \frac{\rho g H^2 L_c}{8} \tag{7}$$

where:

H: mean wave height in the wave train in the Kelvin wedge.

The power in the wave can be derived from the following equation based on the total energy represented by the dominant wave in the wave train.

$$P = Enc \tag{8}$$

where:

P: Wave power in ft-lbf per second;

n: Group velocity factor;

E: Wave energy in lbf;

c: Phase Velocity.

If we equate the wave making effective power to the wave power, we can estimate the height of the wave that would be recognized by the observer on the shore. The total effective power for wave making is estimated at 1391 lbf times

Table 1. Group velocity at different depths at 12 mph (17.61 ft/sec).

Depth, h feet	n	Group Velocity, U
5	0.845	12.14
10	0.640	9.20
15	0.545	7.83
20	0.512	7.36
25	0.503	7.23

the speed of 17.61 feet per second or 24,509 ft-lbf per second. The wave train is split in two with a wave train running on either side of the vessel. The single dominant wave is assumed to be close to root mean square of the group of waves travelling with the boat. The effective power for the dominant wave is the RMS value of one half the total power or 8664 ft-lbf/sec. So the estimated wave height can be determined from the effective wave making power of the power and the above equation for the effective power of the wave.

$$8664 = Enc = \frac{\rho g H^2 L_c}{8} nc \tag{9}$$

$$11900 = Enc = \frac{\rho g H^2 L_c}{8} nc \tag{10}$$

The estimated wave height of the dominant wave is 1.85 feet (0.564 m) at 7200 lbs displacement and 2.26 feet (0.688 m) at 10,500 lbs displacement.

Figure 7 shows the wake height of the boat at 7200 lbs displacement at 12 mph in 15 feet of water. The second wave crest behind the boat is the dominant wavelength running at the group velocity. The height of the wave from trough to crest is approximately 0.50 m. It is also clear in the figure that the wave height dissipates quickly as it expands outward and away from the boat. The height of the dominant wave may not carry the RMS value of the energy in the wave train and the figure may be closer to half than the RMS value of 70.7 percent.

Figure 8 shows a second view of the wave train behind the wake boat running at 12 mph. The peak wave at the tip of the train has a height of 0.50 meters (1.64 feet). The center peak is the vertex of the surface disturbance. The figure shows how the wave train is a series of waves with diverging and transverse waves.

For comparison, the wave power at a free running speed of 30 mph at a displacement of 5500 lbf is estimated. The wave making resistance is estimated at 463 lbf. The speed of 30 mph equals 44 feet per second. The effective wave making power is the speed times the force applied to the water surface or 20,372 ft-lbf per second. The wave making power is higher at 30 mph at a lighter displacement. The data is presented below.

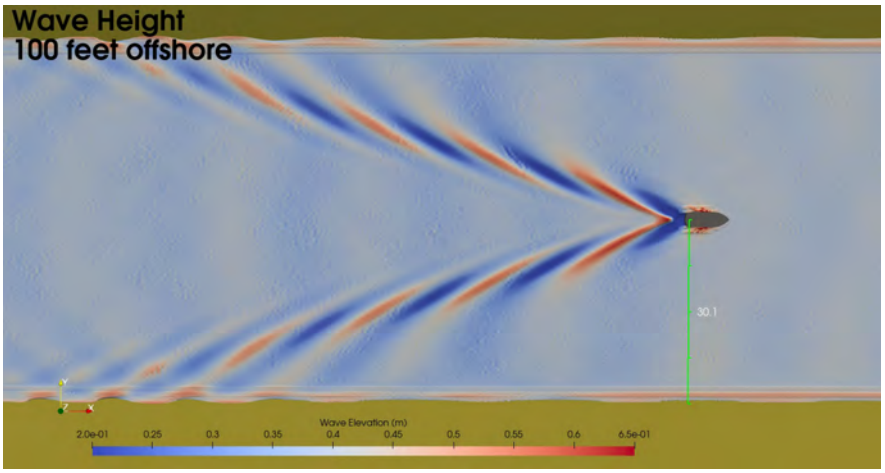

Figure 7. Wake Height of Wake boat 100 feet (30.5 m) from shore in 15 feet of water.

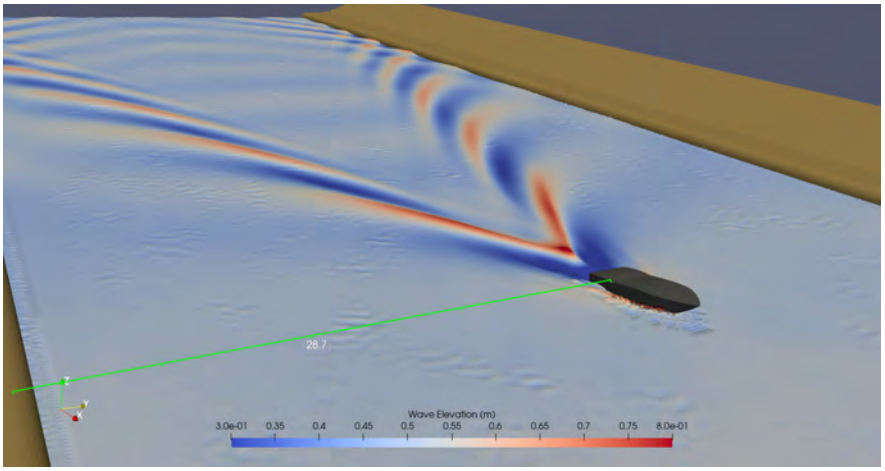

Figure 8. Wake boat at 12 mph in 15 feet of water approximately 100 feet from shore.

Speed: 30 mph = 44 feet per second;
Displacement: 5500 lbf;
Wave Making Resistance: 463 lbf;
Effective Power $R_r V$: 20,372 ft-lbf/sec;
Wave Phase Velocity—c: 35.9 ft second;
Group Wavelength L_c: 251 feet;
Group Velocity Factor—n: 0.956 (15 foot water depth);
Group Wave Energy: 7203 ft-lbf/sec;
Estimated Wave Height: 0.327 feet (0.1 m).

Although the wave height is significantly lower, the wave energy is only seventeen percent lower than the wake surfing condition. In addition, the longer wavelength will allow the high-speed wave to travel further with less dispersion. The higher energy is primarily a function of the higher velocity of the wake. The wave loses a certain amount of energy during each period. The longer wavelengths are travelling faster and have a longer period. The period of the wake surfing wave group is 2.81 seconds compared to 7.0 seconds for the wave group in the free running condition at 30 mph. The higher speed craft running at the same distance from shore will generate similar wave energy striking the shoreline than the wake boat at a heavier displacement running at 12 mph. In each case, the recommendation is to operate the boat 200 feet from shore and in water depths greater than 10 feet.

3. Computational Fluid Dynamic Analysis of Wake Surf Boat

The purpose of this section is to evaluate the waves generated by a wake surf type of boat. The initial development was untaken in Sections 1 and 2 to prepare the reader for the application of CFD in predicting the height, period and distribution of the wave train generated by a passing wake surf boat. The difficulty of developing a model is that only a single condition can be run at one time. The wake is influenced by obvious factors including the vessel weight, running trim and center of gravity. As discussed in Section 2, the running trim and displace-

ment are directly related to the resistance of the vessel. Other factors include the water depth and distance from shore. To a lesser extent, the type of shoreline also may have an influence on reflected waves.

Based on the speed of the wake surfing boats, a depth of ten feet or higher will have little effect on shape, height, and period of the wave train [3]. As the wave train approaches a sloped beach the waves will tend to pile up. The range of CFD analysis includes two operating ballast conditions. The ballast conditions are outlined in Section 2 at displacements of 7200 lbf and 10,500 lbf. The heavier load is an extreme case to define the heavier range of wake surfing boats. The waterline length of the test boat is 19.63 feet at a displacement of 10,500 lbf is at the limit for the boat. The wake surf boat market includes heavier boats, but they have longer waterlines, and the expected running trim would be lower.

The boats were run at two basic speeds to represent wake surfing at 10 - 12 mph and 20 - 22 mph to represent wake boarding. The CFD domains are expanded to provide the wave train well beyond and behind the boat to show the expected dissipation of the wave train over time. The time range of the domain based on the speed is about 40 seconds in the wake surfing mode and 25 seconds in the wake boarding condition. The size of the domain for the study in shallow water is 47 million cells and 67 million cells for the deep-water domain. A third domain modeling a channel with a shoreline on each side was developed to show the wave impact with the shoreline and reflected wave shapes. The size of the channel domain is 45 million cells. The channel model shows the boat approximately 100 feet from shore while the deep-water model shows the boat 200 feet from shore. The shallow water model shows the boat 150 feet from shore. The depth of the channel model is 16.4 feet (5 m), the depth of the deep-water model is 33 feet (10 m) and the shallow water model is 10 feet (3 m). All the models were run at the Super Computing Center at Ohio State University (https://www.awesim.org/).

3.1. CFD Model Domains

In general, for the CFD modeling of hulls, the domain is minimized to reduce the computational time required to solve the equations. The purpose is normally to estimate the resistance of the hull at a given speed, operating displacement, and center of gravity. In the present case, the shape, extent and size of the wake is the primary goal. To model the wave train, the domain needed to be refined well beyond the normal resistance estimate.

The domain was extended side to side to capture the wave train as it developed behind the boat. The depth was set to determine impact of the water depth on the shape, height and extent of the wave train. The largest impact on the model was the refinement of the mesh that made up the body of water. The mesh at the surface was critical to accurately define the wave surface and the mesh below the surface was critical to determine the impact of the water depth.

The canal model was developed to show the effects of the beach on either side and the impact of reflecting waves. The shallow water model depth was constant

to starboard and sloped to nothing on the port side to show the effects of waves approaching a shoreline.

To develop a full wave profile over the whole domain the models were all run for 2000 seconds with the boat fixed on the surface. The forces and moments were evaluated, and the position of the boat was balanced based on the vessels weight and center of gravity for each speed point.

The domain of the canal model is shown in Figure 9. The figure shows the water mesh from the inlet to the domain with the boat 80 meters into the model. The green boundary is the beach with a twenty-degree slope on each side. The mesh around the boat is more refined by a factor of eight and a layered mesh of three elements is added to the boat surface. An additional layer of two elements is added to the beach surface to model viscous effects.

Figure 10 shows the domain of the shallow water model. The width of the model has been extended to 45 meters (150 ft) to look at the increased distance from shore. The water depth reduces to 0.45 m to port and is a constant 3 m (10 feet) to starboard. The boat and bottom have a layer of cells added to model the viscous effects.

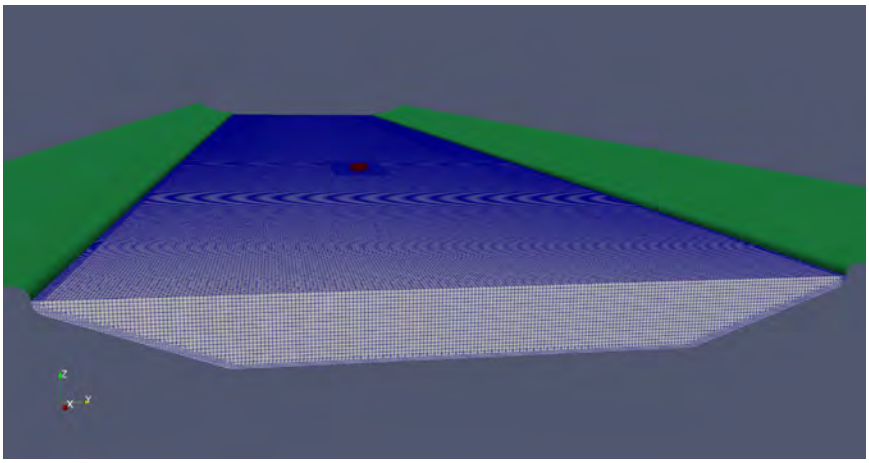

Figure 9. Channel model showing the water mesh.

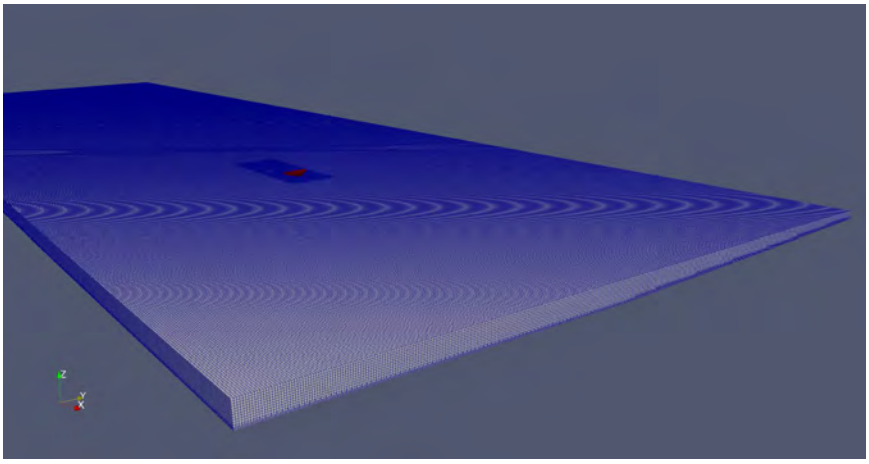

Figure 10. Shallow water model showing water mesh.

Figure 11 shows the refined mesh around the boat with the added mesh layers on the boat hull. The red in the model is the water while the blue is the air with the boat running at 11 mph. The white is the transition between the two liquids. The fluids are immiscible and are split by cells.

Figure 12 shows the water mesh for the deep-water model. The water depth goes to zero on the port side and remains at 10 m (30 feet) to starboard.

3.2. Computational Results

The iterative process of the position of the boat on the surface was made easier using the simulation in Section 2 as a starting point. Figure 13 shows the convergence of the forces and moments on the hull in shallow water model at 12 mph.

The different effects that were investigated include the distance from shore, the depth of water and the type of beach. The Canal model shows the distance from shore of approximately 100 feet with a 20-degree sloping beach.

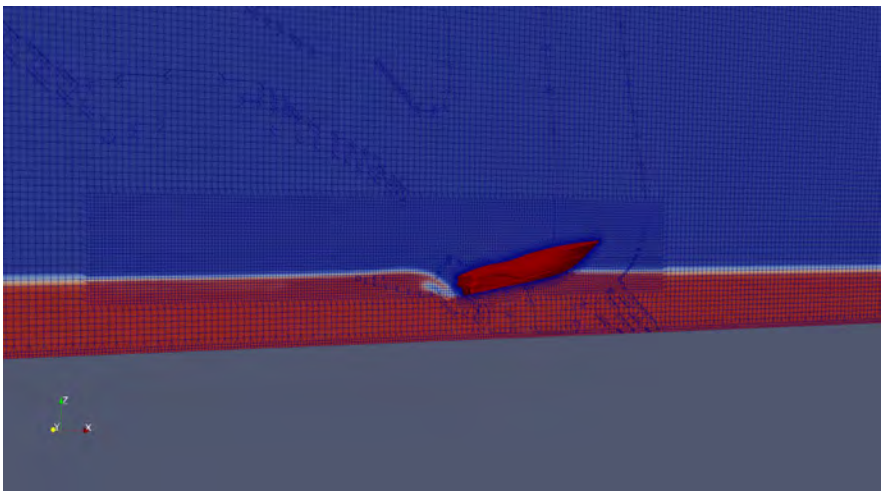

Figure 11. Shallow water model showing the refined mesh.

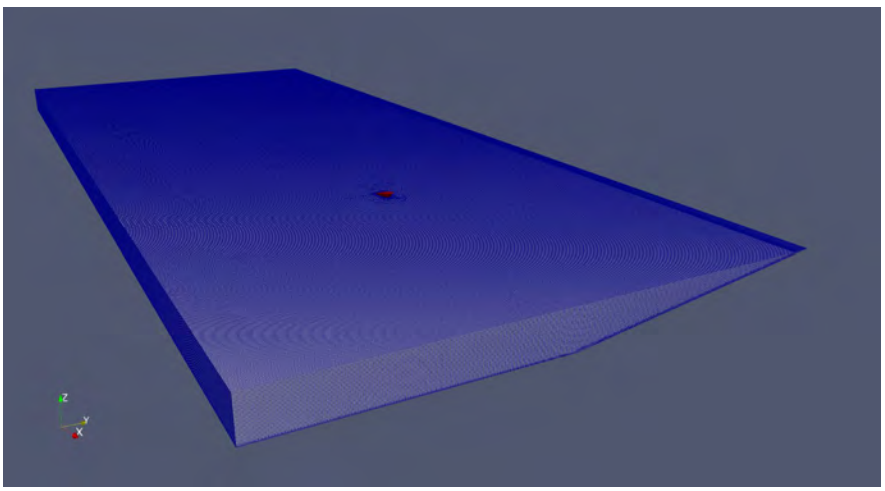

Figure 12. Deep water model water mesh.

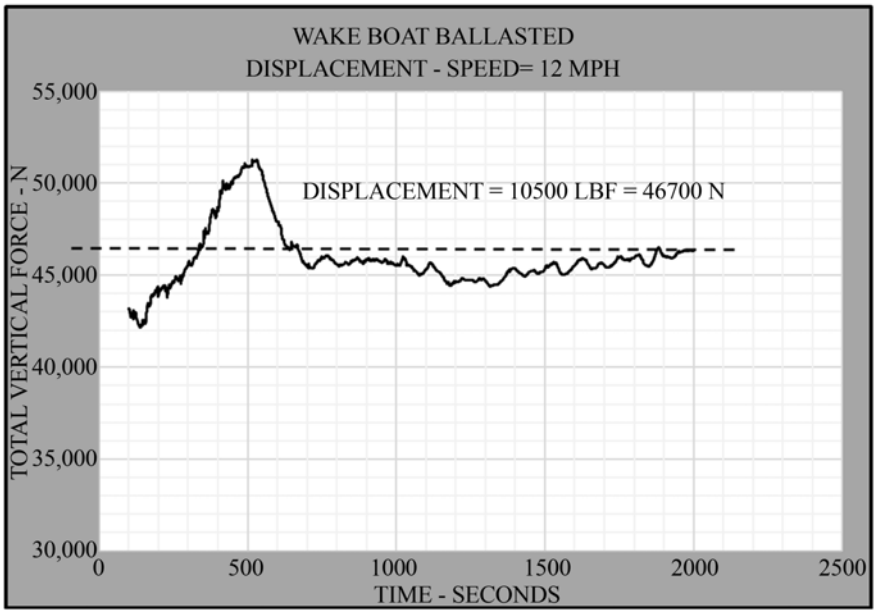

Figure 13. Convergence of vertical force.

The canal model is a good model to show the change in the wave train due to boat speed. The runs were done at the same displacement of 7200 lbs at 11, 17 and 23 mph. **Figures 14-16** show the change in the wave train shape based on vessel speed in 5 m (16 feet) of water.

The figures show the wake stretching further behind the boat as the divergent waves tend to turn towards shore as the speed increases. The shallow water begins to have some impact at 23 mph with a larger series of reflected waves.

Figure 17 shows the canal model in perspective with the shore running behind the boat. The distance of the beach is 28 meters (92 feet). **Figure 18** shows the shallow model at 45 meters (148 feet) off the beach and **Figure 19** shows the deep model that is 60 meters (197 feet) from the edge of the domain. The boat is traveling at 11 mph in each example at a displacement of 10,500 lbf ballast for wake surfing.

In each figure the number of waves striking the shore increases as the distance increases. The number of waves striking the shore 28 meters in **Figure 17** is five. The number in **Figure 18** at 45 meters is eight and the number at 60 meters in **Figure 19** is eleven. The group of waves tends to separate out into its components centered around the group velocity. The wave train shape height and amplitude will be discussed further in Section 3.3.

Figure 20 and **Figure 21** show the change in depth at the heavy displacement. **Figure 20** is run in deep water at 30 feet deep and **Figure 21** is run in shallow water at 10 feet (3 m) deep.

The shallow water runs in **Figure 21** shows more wave peaks in view meaning that the group of waves is separated quicker in shallow water. The wave train begins as a single large wave at centerline and the wave group disperses outward from the center at an included angle of 38.4 degrees.

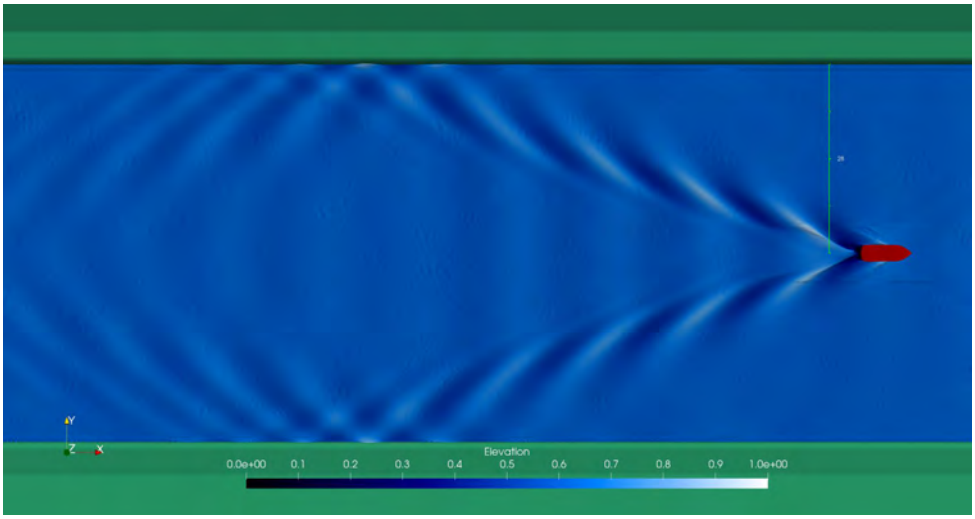

Figure 14. Canal model at 11 mph.

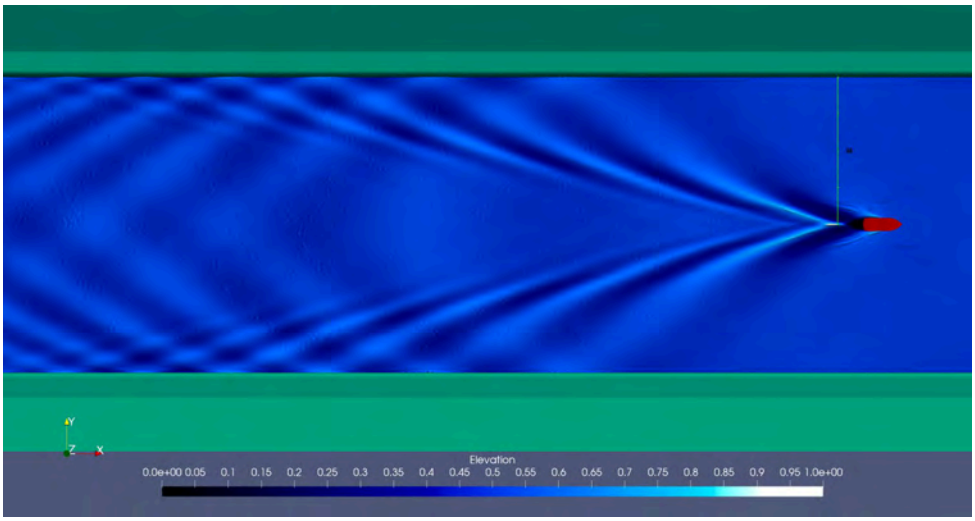

Figure 15. Canal model at 17 mph.

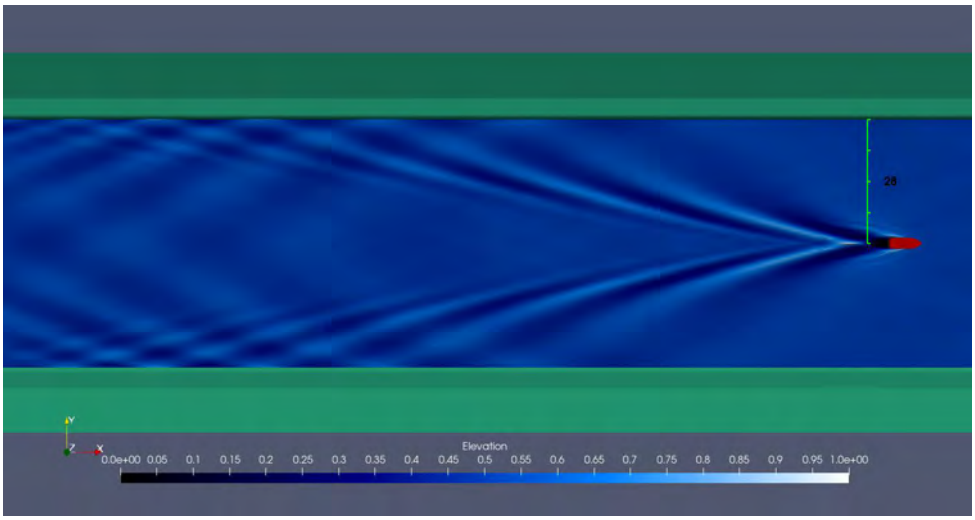

Figure 16. Canal model at 23 mph.

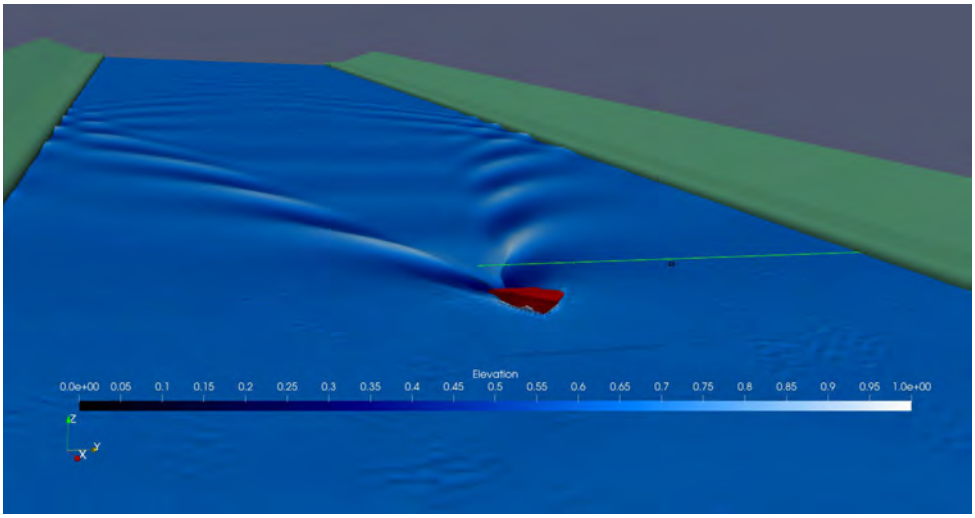

Figure 17. Canal model at 11 mph.

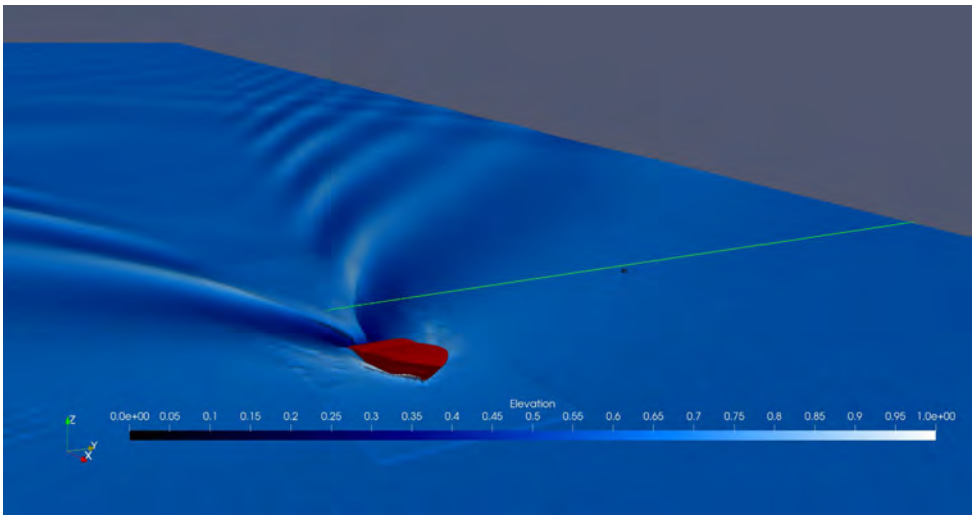

Figure 18. Shallow water model at 11 mph.

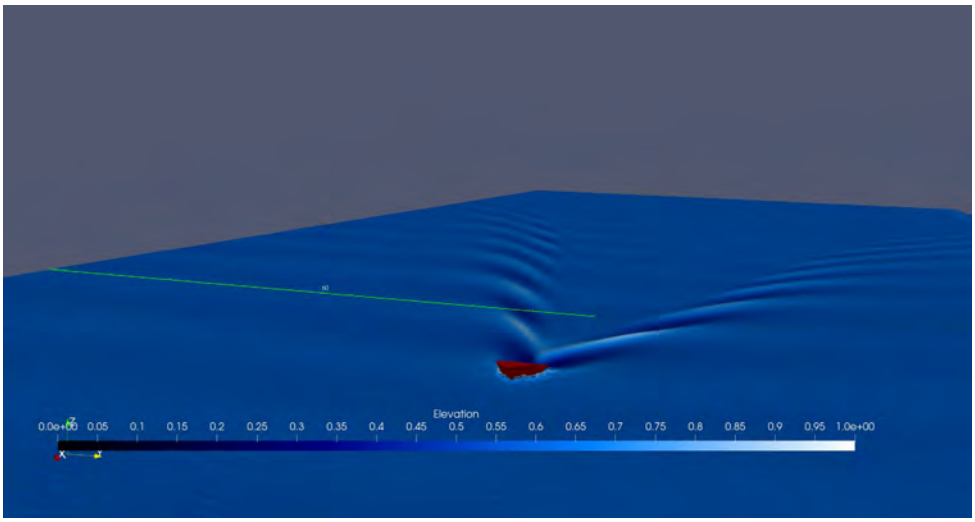

Figure 19. Deep water model at 11 mph.

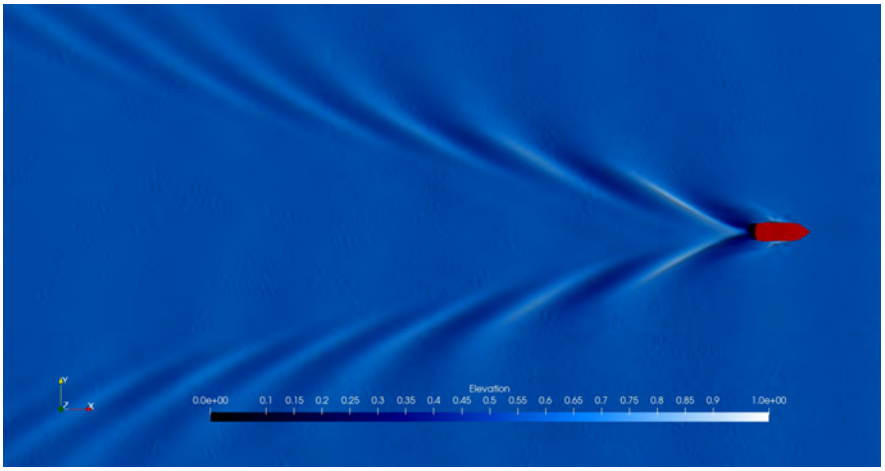

Figure 20. Deep water runs at 12 mph at 10,500 lbs displacement.

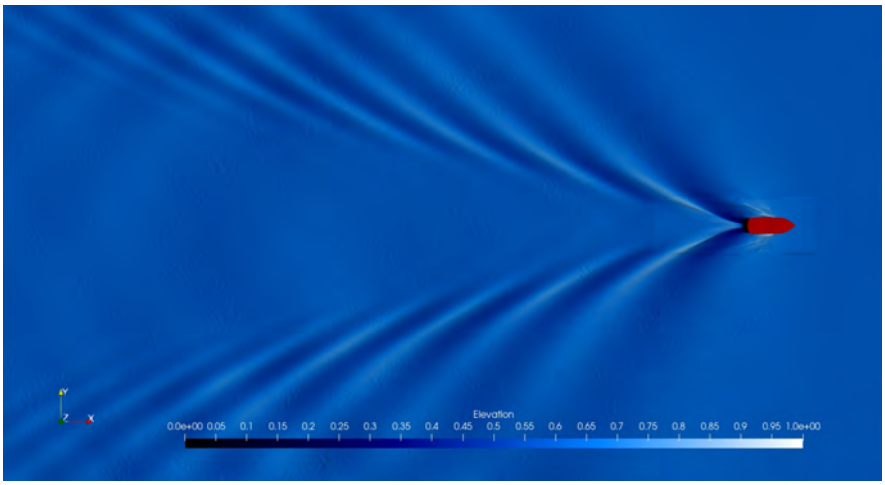

Figure 21. Shallow water runs at 12 mph at 10,500 lbs displacement.

3.3. Wave Shape and Group Velocity

If we take cuts at different distances off centerline, the wave profile will begin as a single major wave where the surfer is on the wave. Moving outboard from centerline, the wave train breaks into smaller waves with periods and wavelengths around the group wavelength based on the wave celerity. The wavelength is the longest in front or in the lead as the faster waves outpace the slower ones until the group separates out into a group of around seven peaks.

The group of waves satisfies the simple dispersion equation [2] as follows.

$$c = \left(\frac{g\lambda}{2\pi}\right)^{1/2} \tag{11}$$

where:

c: wave speed (feet per second);

λ: wavelength (feet).

If we simplify and rearrange the variables, we get the Froude number showing the wave speed and wavelength are proportional to boat speed.

$$F_n = \frac{V}{\sqrt{gl}} = \frac{2\pi c^2}{g\lambda} = \frac{c}{\sqrt{g\lambda}} \tag{12}$$

The wave trains from the deep-water model were cut at 5 m (16 feet), 10 m (33 feet) and 20 m (65 feet) to show the shape of the wave train as it traveled away from the boat. Figure 22 shows the section through the surface at 5 meters (16 feet) off centerline. The wave is primarily a single large wave. Figure 23 shows a section at 10 m (33 feet) and Figure 24 shows the section at 20 m (65 feet). The sections are taken at 12 mph in the deep-water model.

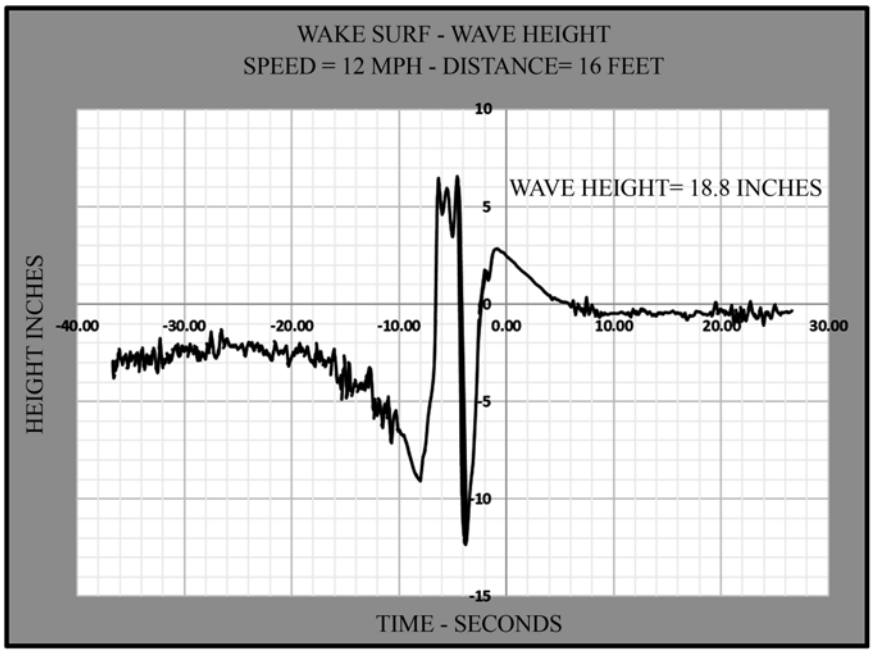

Figure 22. Surface section at 5 m off centerline in deep water at 12 mph.

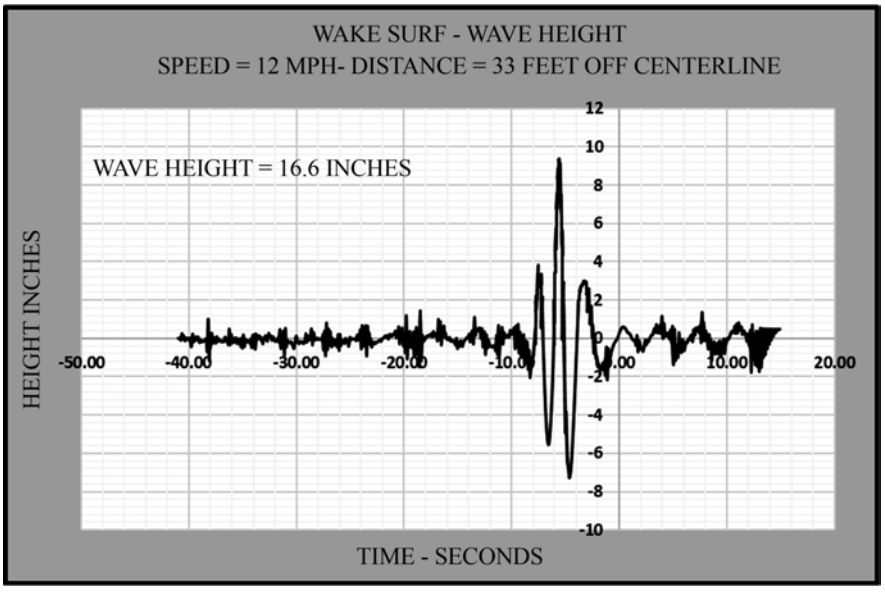

Figure 23. Surface section at 10 m off centerline in deep water at 12 mph.

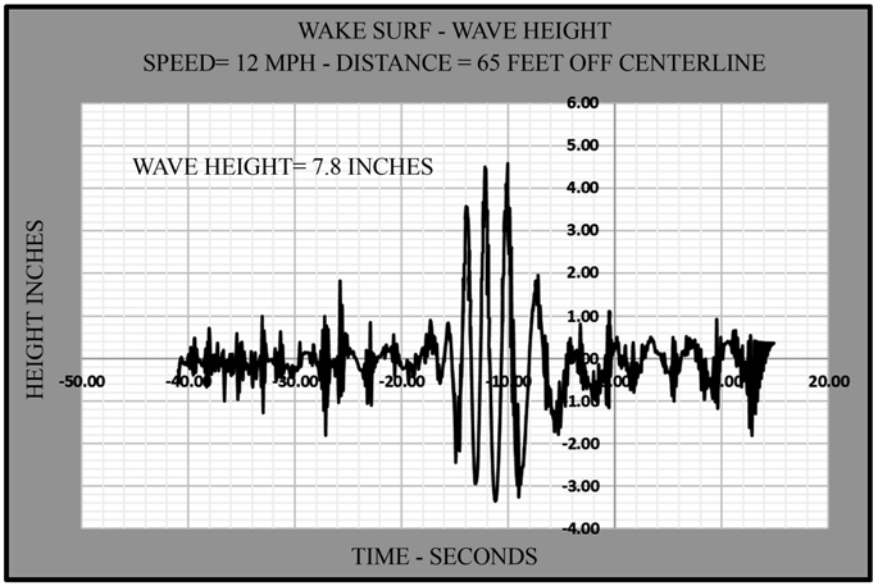

Figure 24. Surface section at 20 m off centerline in deep water at 12 mph.

The deep-water model is not affected by the depth and the group velocity will be half of the wave velocity allowing the wavelength to disperse. The shape of the wave profile in **Figure 22** is most likely missing a bit of the top of the wave because the wave is breaking. The wake clearly shows a single disturbance. In **Figure 23**, the wave train has split in two at one period (2.8 seconds) behind the first section at 5 meters. **Figure 24** is about four wave cycles behind the boat and the section clearly shows five wave peaks. The wave train has separated into a group of waves as it travels away from the boat. The longer wavelengths lead the group with the peak amplitude wave in the middle. The wave period at the front of the group in **Figure 24** is 3.73 seconds. The last wave has a period of 1.86 seconds. The peak wave or dominant wave has a period of 2.81 seconds.

The time plot is the longitudinal position from the transom divided by the speed of the boat. The time zero is the boat passing at the transom and the negative time is the distance behind the boat. Positive time begins forward of the transom and negative time behind the transom corresponds to the domain dimensions with the origin at the transom.

4. Experimental Field Data

There are numerous ways to estimate the height of waves on the water. In deep water the wave disturbance from boats has been measured with submerged pressure sensors. The pressure sensors needed to be calibrated and the distance below the surface can be affected by current and the orbital velocities in the wave. A common approach in the study of offshore waves is to measure the maximum velocity at the surface using a high-speed GPS recorder.

Another approach has been to measure the wave height directly with sensors that are in the water column and measure the running surface height. In general, these units are floating and can be affected by the orbital velocity, background

waves and fundamental heave frequencies as the wave passes. The measurement devices are generally floating and anchored to the bottom.

Reference [4] took a series of wake measurements in shallow and deep water at various distances from shore. The boat used in the experiment was a wake surf boat at a displacement of approximately 10,500 lbs. The wave heights were measured perpendicular to the shoreline, but the boat ran at an angle to the shoreline to produce a wave train that travelled perpendicular to the shoreline. The angle is assumed to be approximately 19 degrees based on a Kelvin wave. The data used for comparison were taken using pressure sensors located below the surface. The sensitivity and calibration of the sensors are difficult when trying to measure the wave heights in shallow water. The limited depth reflects a pressure field off the boat as it approaches and then quickly dissipates as the boat passes. The plots shown are taken from data in relatively deep water with approximately ten feet of water below the sensor. The shallow water wave height data was not consistent and ignored for comparison.

The CFD analysis shows the initial wake is a disturbance that breaks up into its component waves as it moves away from the boat. The wake sections taken off centerline represent the travel time of the wave train away from the boat. The plotted wave profiles from [5] show the wave profile of a boat in wake surfing mode at different distances from the path of the boat. Each sensor represents a distance and time from the path of the boat after it has passed. The time represents wave cycles as they travel over the surface of the water. **Figure 25** shows the field test wave train over time while it travels away from the boat. The time is difficult to compare since the sensors are perpendicular to the shore and at an unknown angle to the line of travel of the boat. The field data time plot is roughly from the time the boat passed the line of sensors. The CFD data follows

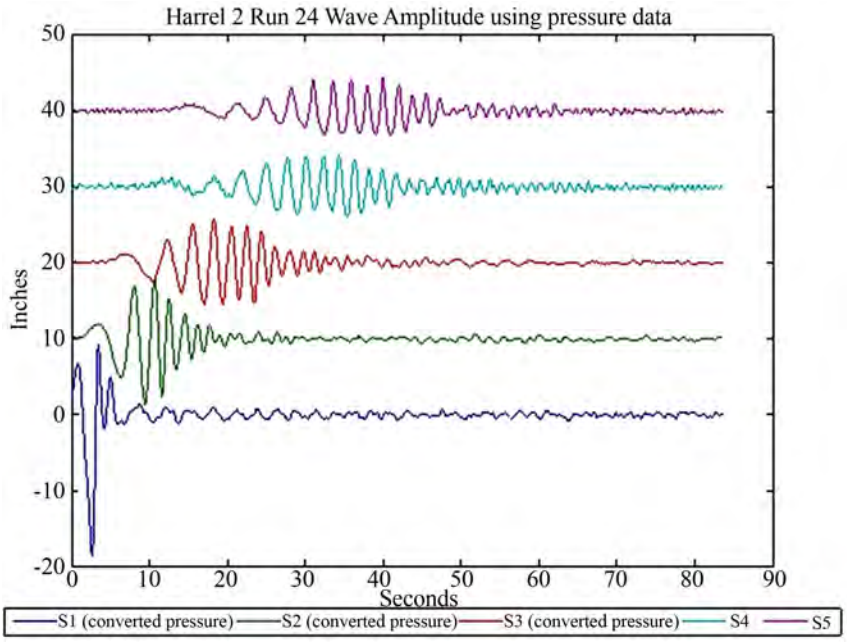

Figure 25. Data provided by [4] at 11 mph at a displacement of 10,500 lbf.

the sign of the position of the boat from the transom. The CFD model had 67 million cells shown in Figure 12. The resolution near the boat is good but deteriorates at more than three boat lengths away from the boat making it impossible to plot the expected wave height more than 100 feet from the track of the boat.

The CFD analysis data is taken at a point in time or picture of the wave train. By taking cross sections through the CFD domain at positions off centerline parallel to the path of the boat, the shape of the waves can be estimated. The time on the plot utilizes the speed of the domain and distance to estimate time. Figure 26 shows the CFD wave profile at 5 m (16 ft) off centerline. The disturbance is very similar to the provided shown at the bottom of Figure 25 where the sensor was close to the path of the boat. Figure 27 shows the CFD profile at 20 m (66

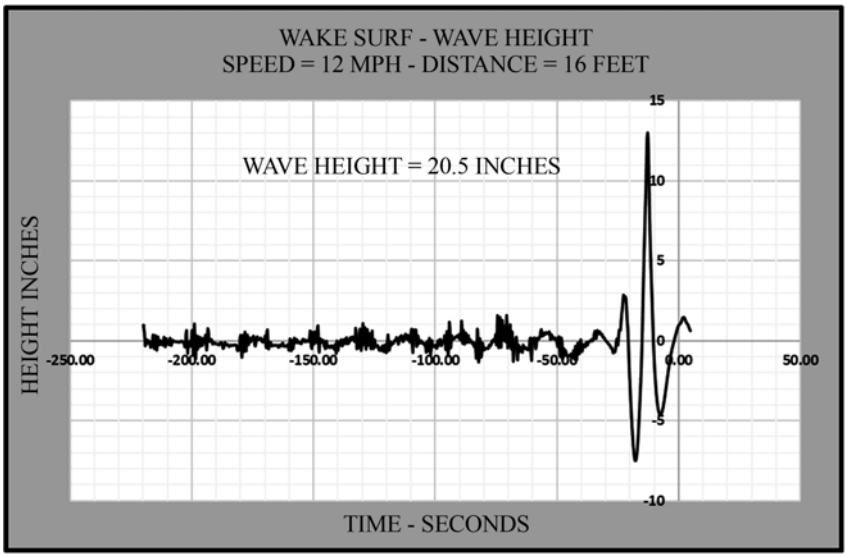

Figure 26. Wake profile 5 m off centerline at 11 mph at a displacement of 10,500 lbf.

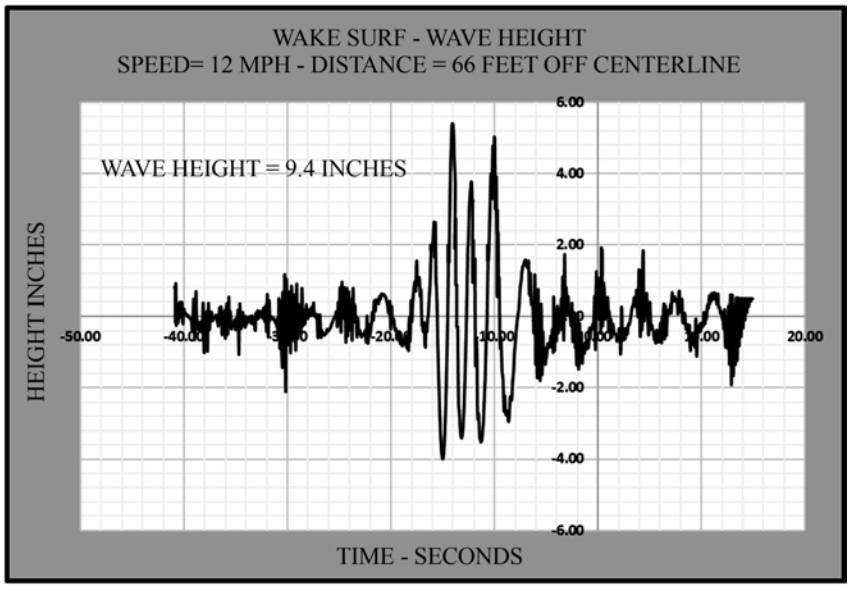

Figure 27. Wave profile at 20 m off centerline.

feet) off centerline. The figure represents the third profile from the bottom in Figure 25. The CFD analysis captures the shape, height and distributions of the wave train generated by the boat in the field test. Although the two boats are different their basic configuration and weight are similar.

The wave generated by any planning craft will produce a disturbance on the water surface. As the boat passes the wake breaks into a series of smaller waves. The wake extends outward and breaks into its component parts. The measured data and CFD data results show the wave disturbance at the transom and the group of waves trailing behind the vessel. The wave heights, period, and shape of the wave train match well. The wave height drops in half after about 15 cycles or 30 seconds. The field test data and CFD analysis show the same reduction in wave height as the wave train moves away from the path of the boat.

A similar review of the wave profile of the boat at 20 mph in a wake boarding condition at 10,500 lbf between the CFD analysis and the field data shows similar results. The wave profiles show the same initial large disturbance, and the group components separate into a range of individual waves of different wavelengths.

Figure 28 shows the wave height plot at the different sensors running in deep water. The time starts as the boat passes the line of sensors. The boat passed at a reported ten feet from the first sensor or about one wavelength based on the plot.

Figure 29 and Figure 30 show the wave profile at 20 mph during wake boarding. The wave shape, height and period are all consistent between the field test data and the CFD analysis. Figure 29 shows the wake near the transom at 5 m off centerline and Figure 30 shows the wake profile 20 m off centerline. The higher speed of the vessel puts the CFD plots at the first two plots from the bottom in Figure 28 showing the wave profiles of the field test.

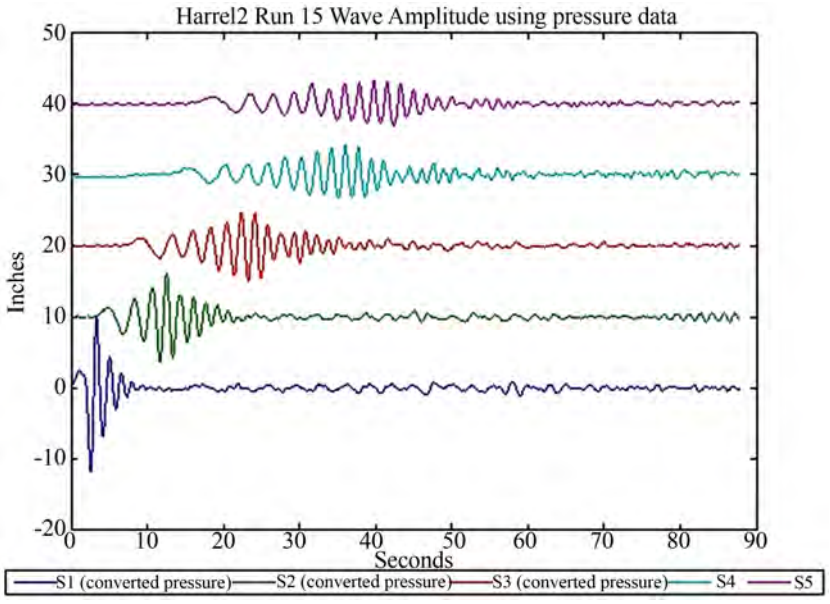

Figure 28. Wake boarding wave train profile test data 20 mph at a displacement of 10,500 lbf.

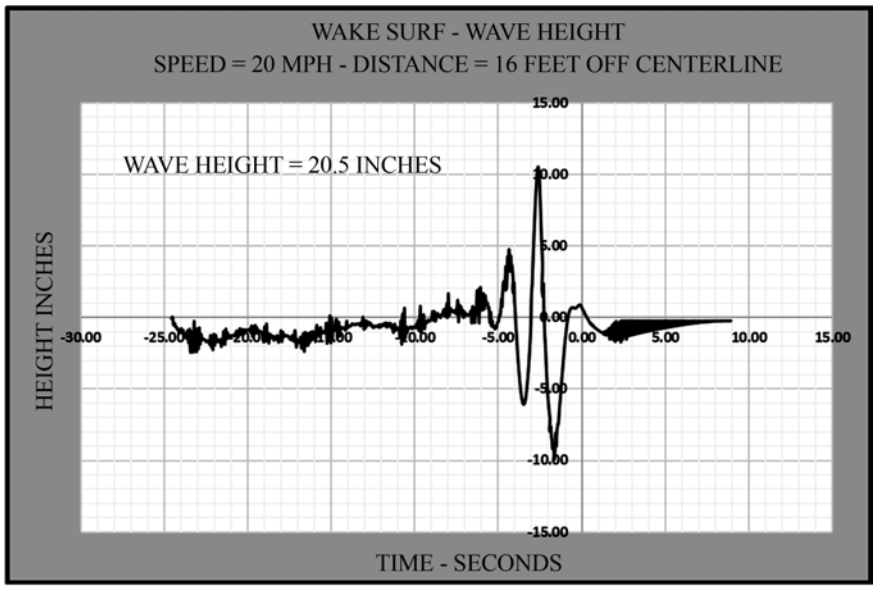

Figure 29. CFD results at 20 mph at 5 m off centerline at a displacement of 10,500 lbf.

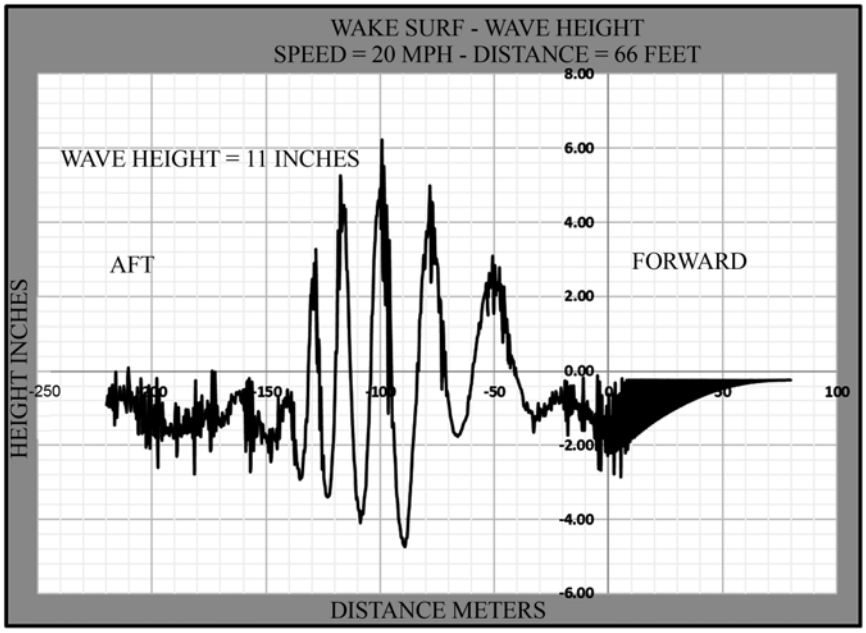

Figure 30. CFD results at 20 mph at 20 m off Centerline at a displacement of 10,500 lbf.

5. Wave Energy Attenuation

The wave train behind the boat is a group of waves following the boat with a range of periods and wavelengths centered around the group velocity. The wave train expands into the individual waves as it travels away from the boat and its energy will dissipate as it travels.

The primary loss in energy as the wave train travels in shallow water generally found in confined bodies of water is through bottom friction [2]. The bottom friction is a result of the orbital motion of the wave interacting with the bottom as the wave travels. The amount of energy lost per cycle can be significant de-

pending on the depth of the water and the average wavelength.

The average wavelength is proportional to the vessels' speed. For example, the average wavelength from a wake surfing boat running at 12 miles per hour is approximately 40 feet while the average wavelength from the same boat at a wake boarding speed of 20 miles per hour is 112 feet.

The loss of energy is a function of the viscosity, frequency, and depth of the water. The following formula is provided [2]. The square brackets are the viscous components, and the curling brackets provide a factor for the wave number and water depth.

$$\text{Loss per Cycle} = \left[\frac{2\pi\left(\frac{\upsilon}{2\omega}\right)^{\frac{1}{2}}}{h}\right]\left\{\frac{2kh}{\sinh\left(2kh\right)}\right\} \tag{13}$$

where υ: kinematic viscosity (ft^2/sec^2)

ω: wave frequency (radians per second);

h: water depth – feet;

k: wave number: $k = \frac{4\pi^2}{gT^2}$;

T: wave period—seconds.

The second term provides the factor based on wavelength and depth. Table 2 and Table 3 show the wavelength, L_w and water depth, h ratio comparing the wake surfing and wake boarding conditions.

Figure 31 shows a plot of the data in Table 2 and Table 3. A cycle is equivalent to one period or one wavelength in distance. The longer wavelength of the

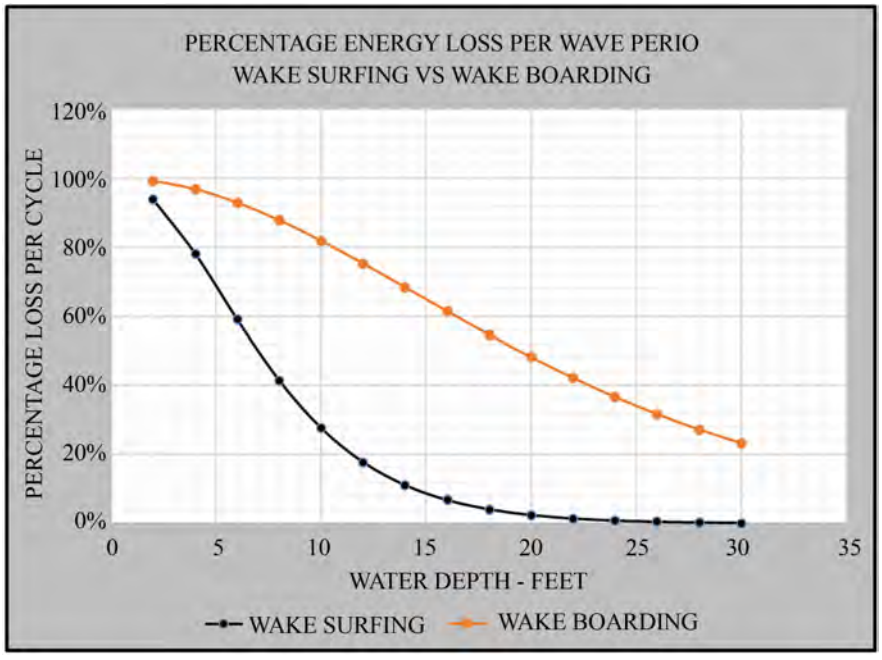

Figure 31. Percentage energy loss per wave period.

Table 2. Wave surfing.

VESSEL SPEED = 12 MPH (19.3 KPH)	WAVE, C = 14.38 FT/SEC (4.38 M/S)
WAVELENGTH = 40.33 FT (12.3 M)	WAVE PERIOD = 2.81 SECONDS
WAVE NUMBER, K = 0.156	CYCLE TIME = 2.81 SECONDS

DEPTH	RATIO	ENERGY
h	L_w/h	LOSS
2	20.17	93.81%
4	10.08	78.14%
6	6.72	59.06%
8	5.04	41.51%
10	4.03	27.69%
12	3.36	17.79%
14	2.88	11.13%
16	2.52	6.82%
18	2.24	4.11%
20	2.02	2.45%
22	1.83	1.45%
24	1.68	0.85%
26	1.55	0.49%
28	1.44	0.28%
30	1.34	0.16%

Table 3. Wake boarding.

VESSEL SPEED = 20 MPH (32.2 KPH)	WAVE, C = 23.96 FT/SEC (7.30 M/S)
WAVELENGTH = 112 FT (34.1 M)	WAVE PERIOD = 4.68 SECONDS
WAVE NUMBER, K = 0.0561	CYCLE TIME = 4.68 SECONDS

DEPTH	RATIO	ENERGY
h	L_w/h	LOSS
2	56.02	99.17%
4	28.01	96.72%
6	18.67	92.83%
8	14.00	87.74%
10	11.20	81.75%
12	9.34	75.16%

Continued

14	8.00	68.27%
16	7.00	61.34%
18	6.22	54.58%
20	5.60	48.15%
22	5.09.	42.15%
24	4.67	36.64%
26	4.31	31.67%
28	4.00	27.22%
30	3.73	23.29%

wake boarding wave will interact with the bottom in deeper water than the wake surfing waves. The observer would see the larger waves impacting the shore from the wake surfing boat due to the shorter wavelengths and lack of interaction with the bottom.

In terms of the shape of wave for wake surfing, the depth Froude Number and its impact on the shape of the wave train are shown in Equation (14). The critical depth Froude number is defined as follows [6].

$$Fr_h = \frac{U}{\sqrt{gh}} \tag{14}$$

where:

Fr_h: Depth Froude Number;

U: Vessel Speed in meters per sec;

g: Acceleration due to gravity 9.81 m/s^2;

h: Water Depth in meters.

The critical depth at 11 mph is 8.1 feet and the depth to minimize bottom effects is at a Fr_h of 0.75 resulting in a depth of 14.4 feet. Anecdotally, the depth of 16 feet has been noted by wake surf enthusiast as the minimum depth for the best wave. In the case of wake boarding, the critical depth is 26.8 feet. Assuming a speed of 20 mph, the Froude depth number is 1.33 at a depth of 15 feet. Reference [6] discusses Fr_h numbers above one as super critical where the wave train produces no transverse waves only divergent long crested waves. The shape of the divergent waves in the absence of the transverse waves would provide an optimum experience for the wake boarder providing clean water between the divergent waves.

6. Turbidity

The power boat is driven through the water by the thrust from the propeller. The propeller generates the thrust required to overcome the hull resistance that includes the power to generate the wave train travelling on the boat. The thrust is generated by a change in momentum of water running through the propeller disk. The added momentum generates a high velocity column of water travelling

through the propeller and behind the boat. The change in momentum generates the thrust needed to propel the boat. The following equation idealizes the estimate of the thrust.

$$T = \rho A V_p \left(V_p - V_0 \right) \tag{15}$$

where:

T: Thrust in lbf;

A: Area of the Propeller Disc (ft^2);

ρ: water density;

V_p: Water Velocity in propeller stream (nP/12) (ft/sec);

n = propeller speed in revs/sec;

P = propeller pitch in inches;

V_0: Boat Speed (ft/sec).

In Section 2 the performance at 12 mph was estimated, providing an engine RPM and required thrust. The resistance of the hull was estimated at 1056 lbf (4697 N). A thrust deduction is added based on the interaction of the propeller induced velocities on the hull. The estimated total thrust required is 1290 lbf (5737 N) based on a thrust deduction of about 20 percent based on the shaft angle and rudder position. The propeller RPM is 1680 with a reduction ratio of 1.57:1 based on the engine RPM of 2636. The required power is estimated at 91 horsepower (67.9 kW).

The propeller pitch is 16 inches and a shaft RPM of 1680 V_p is 37.3 feet per second (25 mph) and V_0 is 17.61 feet per second (12 mph). The stern gear arrangement is shown in **Figure 32** with a shaft angle of 18 degrees. **Figure 33** shows the CFD model with a thrust disc to represent the propeller with the boat operating at 12 mph. The resulting ideal thrust based on the thrust equation is 1746 lbf (7775 N). The actual thrust based on the propeller performance integrated with the shaft line and rudder is 1290 lbf (5740 N).

Seconds. There will be some continued mixing near the surface generated by the wake and the turbulence in the boundary layer of the boat. **Figure 34** provides some insight into a rotating propeller and the vertical movement of water from the surface to the propeller under the boat. The domain has a depth of 5 m (16 ft) at a displacement of 7200 lbs.

The flow is shown in the streamlines through the propeller with the boat hull over the top. The oxygenation of the water through power boat activity has been monitored by the Environmental Protection Agency [7] to show that the body of water sees a general increase in oxygen content during boating activity.

The illustrations of the flow of the propeller in **Figures 33-35** show that the wash does not travel toward the bottom with the movement of the boat through the water. In **Figure 35** the wash reaches approximately seven and a half feet below the surface with the propeller at approximately three feet below the surface.

This is further seen in **Figure 36** which depicts velocity on planes located at various depths below the water surface. Note that this simulation was performed with infinite depth (no bottom).

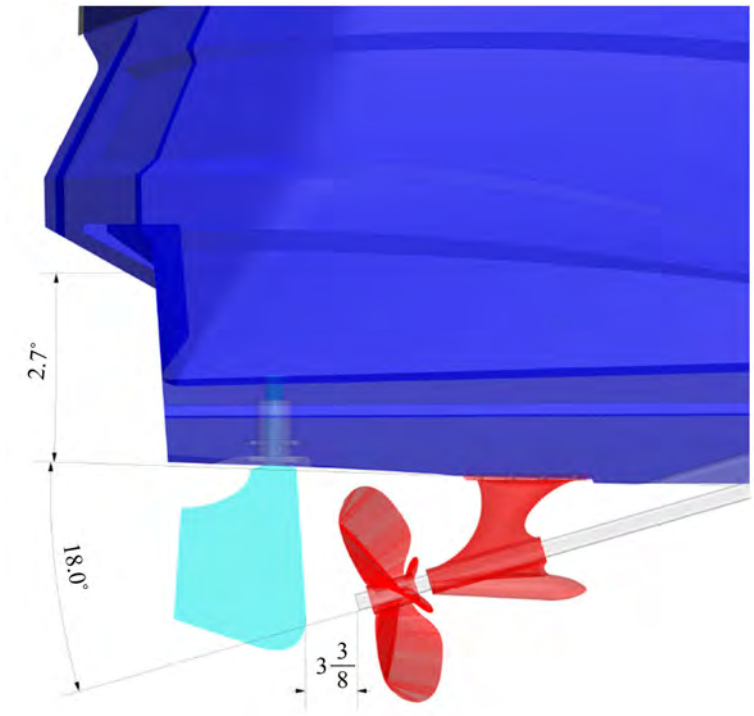

Figure 32. Propeller shaft and rudder arrangement.

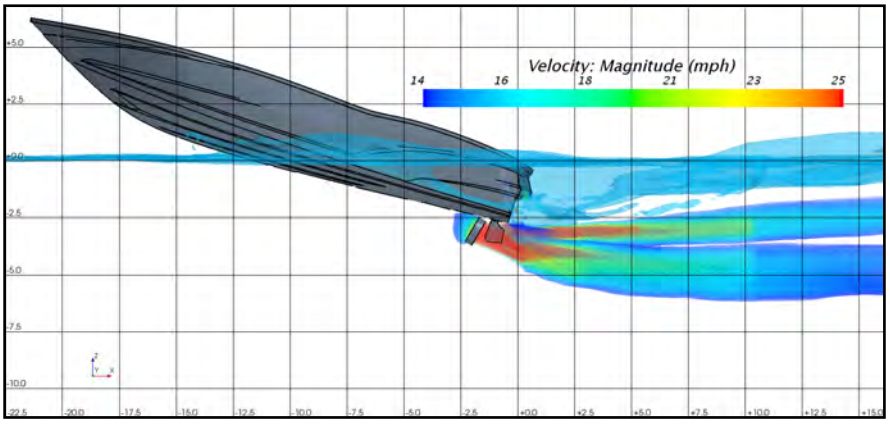

Figure 33. Propeller wash velocity (25 mph = 36.7 ft/sec).

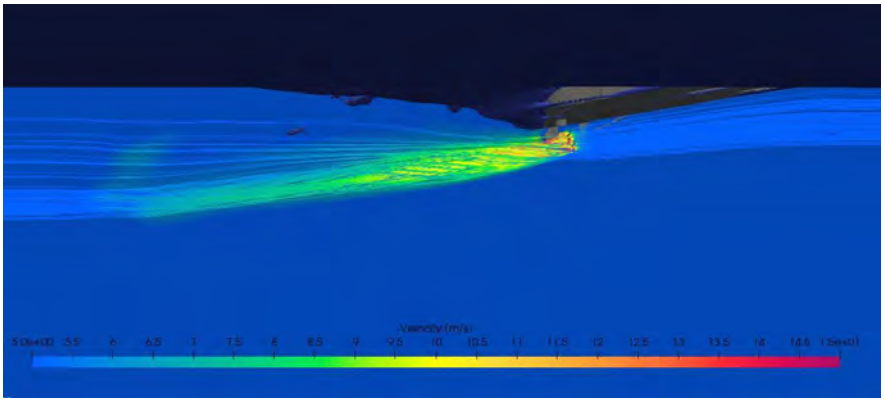

Figure 34. Propeller streamlines showing vertical mixing.

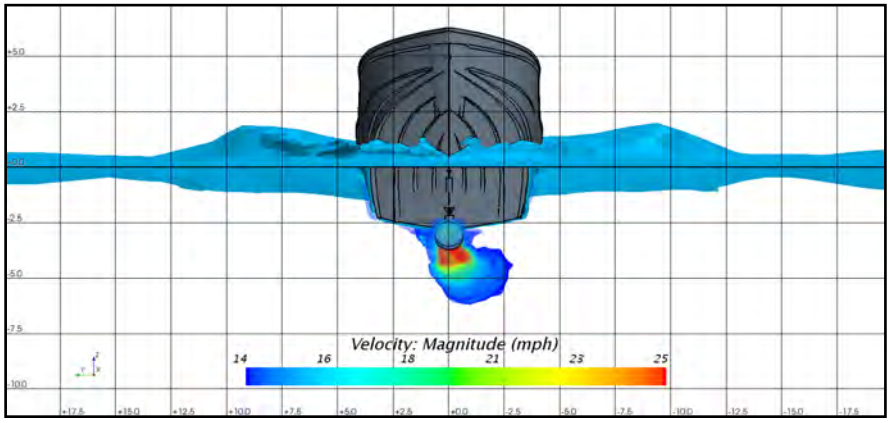

Figure 35. Water velocity below the surface.

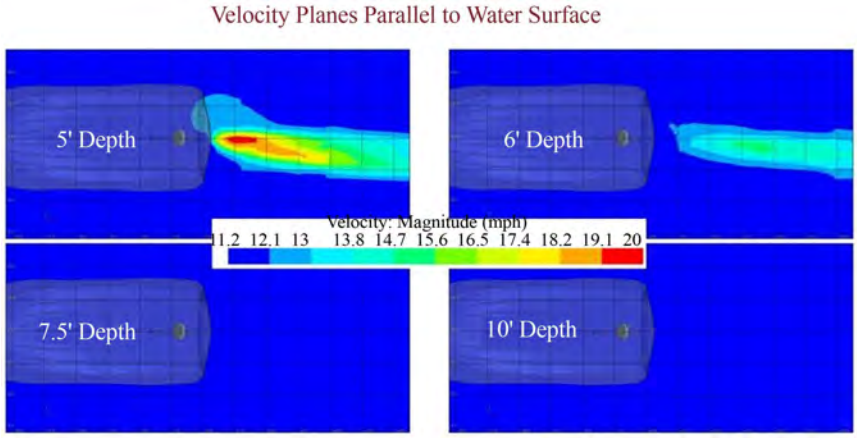

Figure 36. Velocity profiles at different depths.

The inclusion of a bottom could serve to increase propwash penetration depth by as much as 0.5 ft, depending on the proximity of the propeller to the bottom. Additionally, a vessel with larger displacement such as 10,500 lbs from Section 3 could place the propeller slightly lower than 3 ft (1 m) below the surface and require higher thrust to overcome increased drag. For these reasons, the recommended depth for wake surf operation is conservatively set at 10 ft (3 m).

7. Wind and Waves

The wind level around the lake depends on the fetch and buffer zones around the lake. Most lakes experience a significant number of days per year with a steady wave train breaking on the shores generated by seasonal prevailing winds and weather systems. The wind generated waves help mix the water column to distribute nutrients and oxygen rich water. The wind generated waves disturb the shoreline causing widespread turbidity in combination with well oxygenated water. The wind generated waves can cause minor erosion early in the season where the shoreline has been impacted by ice pushing or loading.

Wind generated waves on lakes and small bodies of water are unique that they are generally small but develop very quickly. For a wind speed of 25 miles per

hour, the wave train is fully developed in approximately twelve minutes over a fetch of 800 yards. The significant wave height is ten inches with a wave period of 1.6 seconds and a wavelength of 8.4 feet.

The wind and wave data were developed from Army Corps, Coastal Engineering Manual (2015). The equations were extrapolated to accept shorter fetches and were checked based on observation and computational fluid dynamics. The equations are split into a wave height equation and a wave period equation and include a function for water depth.

The wave height equation:

$$\frac{gH}{U^2} = 0.283 \tanh\left[0.578\left(\frac{gd}{U^2}\right)^{0.75}\right] \times \tanh\left[\frac{0.0125\left(\frac{gF}{U^2}\right)^{0.42}}{\tanh\left[0.578\left(\frac{gd}{U^2}\right)^{0.75}\right]}\right] \tag{16}$$

The wave period equation:

$$\frac{gT}{2\pi U} = 1.20 \tanh\left[0.520\left(\frac{gd}{U^2}\right)^{0.375}\right] \times \tanh\left[\frac{0.077\left(\frac{gF}{U^2}\right)^{0.25}}{\tanh\left[0.520\left(\frac{gd}{U^2}\right)^{0.375}\right]}\right] \tag{17}$$

where

H: Wave height—feet;

U: Wind speed—feet per second;

g: Acceleration due to gravity 32.2 ft/sec^2;

F: Fetch distance in feet;

d: Water depth in feet;

T: Wave period in seconds.

The significant wavelength, L_w:

$$L_w = \frac{gT^2}{2\pi}\left[\tanh\left(\frac{4\pi^2 d}{T^2 g}\right)\right]^{\frac{1}{2}} \tag{18}$$

The equation has been analyzed to include smaller fetches and checked using computational fluid dynamics (CFD). **Table 4** shows the results of the equation at a wind speed of 35 mph (15 m/s) and at a depth of 16 feet (5 m). The line in the table is highlighted (fetch of 800 yards) that shows the details of the CFD model.

The table takes the fetch, wind speed and water depth and provides the wave height, wave period and time in minutes for the wave state to become fully developed. In the case of a fetch of 800 yards, the waves will become fully developed after a period of ten minutes. The wave height is 1.11 feet (0.338 m), the wavelength is 9.5 feet (2.9 m) and the wave period is 1.86 seconds. The impact of the wind event would have a 1.16 foot (0.354 meter) high wave impacted the shoreline every 1.86 seconds or approximately 1940 times per hour. Another in-

teresting observation factor is that the sea state only takes ten minutes to become fully developed at a wind speed of 35 miles per hour. Figure 37 shows a photograph of the wave spectra on a lake with a fetch of about one mile in 15 - 20 mph (24 - 32 kph) of wind.

Figure 38 shows the results of the CFD analysis of the wave train over the 800-foot fetch. The CFD model uses 32 million cells and a long eddy simulation to model the wind to water interface. The elevation shows a wave height of 0.32 meters which corelates to the wind-wave model shown above.

Figure 37. Image of wind driven waves at 25 - 35 mph.

Table 4. Wave height estimate.

FETCH YARDS	FETCH FEET	WIND FT/SEC	DEPTH FEET	WAVE HEIGHT	WAVE PERIOD	WAVELENGTH FEET	TIME MINUTES	WAVESPEED FT/SEC
100	300	51.4	16	0.267	0.941	4.82	2.71	2.13
200	600	30	16	0.357	1.101	5.64	4.59	2.49
300	900	30	16	0.422	1.205	6.17	6.23	2.73
400	1200	30	16	0.475	1.282	6.57	7.75	2.90
500	1500	30	16	0.521	1.344	6.89	9.18	3.04
600	1800	30	16	0.561	1.396	7.15	10.54	3.16
700	2100	30	16	0.598	1.440	7.38	11.85	3.26
800	2400	30	16	0.631	1.480	7.58	13.12	3.35
900	2700	30	16	0.662	1.515	7.76	14.34	3.43
1000	3000	30	16	0.691	1.547	7.93	15.54	3.50
1200	3600	30	16	0.743	1.602	8.21	17.85	3.63
1400	4200	30	16	0.791	1.649	8.45	20.06	3.73
1600	4800	30	16	0.834	1.691	8.67	22.21	3.83
1800	5400	30	16	0.873	1.728	8.85	24.29	3.91
2000	6000	30	16	0.910	1.761	9.02	26.31	3.99

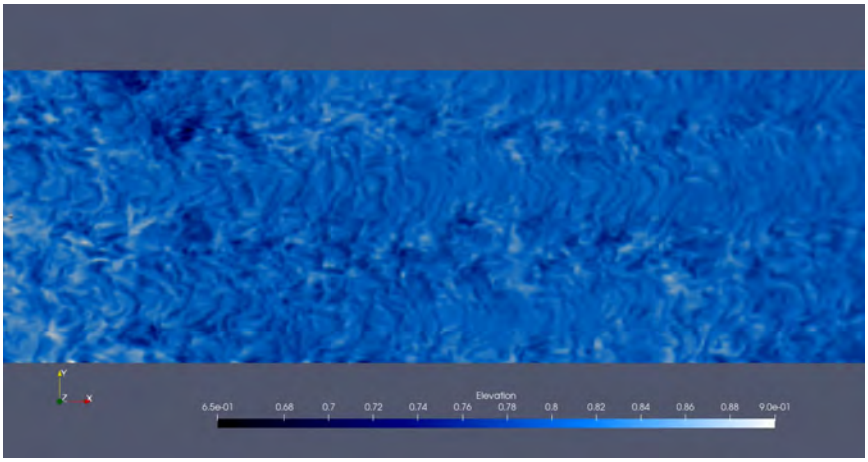

Figure 38. Wave height elevation at 35 mph over a fetch of 800 yards.

Figure 39 shows the wind velocity profile over the water surface. The wind speed is set at the top of the domain at an elevation of 30 meters which is defined as the standard for the measurement of wind velocity overland. The level of turbulence over the water is an indication of the wind and water interaction as the sea state develops.

8. Conclusions

The report has shown that the operation of wake boats on a lake has a minor impact on the environmental health of the body of water.

In an Australian study [8], the goal was to develop a decision support tool (DST) to objectively access the vulnerability of a particular shoreline to erosion. The study references a range of papers that describe the wave energy threshold for erosion. The range of wave heights noted by the author does not include any reference to wind waves and the author states, "Importantly, the previously proposed wave management criteria do not take into account the natural background wave energy, nor the condition of the bank." The quote from the author is true, but the studies cited were all done for a specific body of water. The wave heights noted generally agree on a maximum wave height of 28 cm (11 inches) as it approaches the shore. A broader definition [9] uses the following equation to define a maximum wave height.

$$H_h \le 0.5\sqrt{\frac{4.5}{T_h}} \tag{19}$$

where:

H_h: Maximum wave height (meters);

T_h: Mean Wave period (seconds).

The higher speed wake at 20 mph will cause turbidity through bottom friction while producing a smaller series of waves at the shoreline. The impact of rain events and modest wind events also tend to raise the level of turbidity and are the primary cause of erosion on shorelines and the introduction of sediment into the lake.

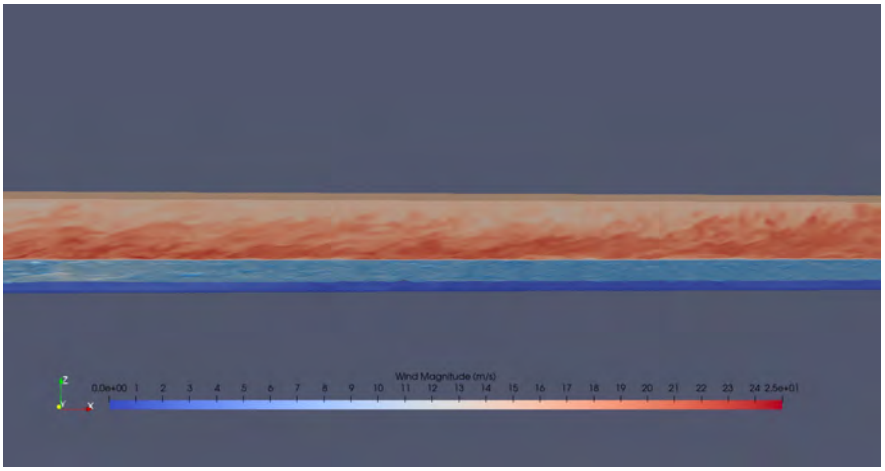

Figure 39. Wind profile over the water surface – 15 m/s at 30 m above the water surface.

In **Section 2** the predicted wave heights based on the wave energy equation assume the wake is a single wave. The equation is accurate close to the boat where the initial disturbance generates the wake. The predicted height of the wave by calculation matches closely with the measured wave height in **Figure 25** and the CFD results shown in **Figure 26**. As shown in the CFD analysis and in field test data, the initial disturbance of the water surface breaks into a group of waves as the wave train moves away from the boat and cycles over the surface of the water. The total energy of the wave train remains relatively constant while dissipating with every cycle, but the initial large wave breaks apart into smaller and smaller waves as the group travels away from the boat. The wave train energy that reaches the shore is reduced as the initial large surfing wave breaks into several smaller waves that will have little or no impact on the shoreline.

Based on both the field data and CFD data, the key to reducing the impact of wake surfing is to operate the boat far enough offshore to allow the wake neat the boat to dissipate into its component parts where the individual wave heights of the group are reduced to a height less than 28 cm (11 inches). The field test data [4] found 200 feet to be adequate to reduce the wave heights to under 28 cm (11 inches). In comparison to wind generated waves, the wave height of 28 cm is common in a modest wind event on lakes with a fetch of a half mile (0.8 km) at a wind speed of 20 mph (9.0 m/s). The full wave spectrum would be fully developed in less than 20 minutes and the average wave period would be 1.5 seconds.

The turbidity question is answered in the CFD analysis where motor craft should not operate at planning speeds in water depths under ten feet. At this depth, the turbidity levels would remain well above the bottom and the wash from the propeller(s) would not endanger any native water plants or disturb small fry. In lakes that are relatively shallow and have large ranges of shallow water, further restrictions may be necessary to reduce the bottom friction generated by turbidity caused by wakes of passing motor craft.

In a study, it has been observed that a wake-surf boat wake will dissipate completely in 300 meters from the boat path while operating in deep water [8]. Op-

erating a boat that far off a shoreline may not be possible due to the size of the lake. The testing [4] [8] suggests a distance of 200 feet allows the wave train to dissipate enough to cause little or no impact on the shoreline. The commonsense approach includes a few operating guidelines for wake surfing. Always operate the boat at least 200 feet from shore and in a water depth greater than ten feet. If possible, run parallel to shore and make only lateral runs without turning at speed to reduce the large wake produced during a turn. If the lake is large enough, relocate within the lake to reduce the time in a particular area.

9. Epilogue

While operating any motorboat on a small body of water, the depth of water and the proximity to shore should be considered for the people on shore as well as the health of the lake. On large lakes in Ontario, a speed limit is imposed within 100 m (330 ft) from shore of 10 kph (6.3 mph) and 70 kph (44 mph) over the remainder of the lake. In New Hampshire there is a no-wake zone within 150 feet of the shore. Many states' focuses are on enforcement of existing laws on the books which state that the boat operator is responsible for their wake and any damage it may cause. The price of a ticket for a wake that causes damage or injury can be as high as $720. The law in Oregon reads if a skipper operates a boat in a way that damages or is likely to damage private property or cause injury, ORS 830.305 clearly states it as a citable offense. At this time many states are opting for the Play Away approach that everyone has a right to be on the water, but anyone that endangers others will be cited.

In some states, they are looking at imposing restrictions on lakes with an average water depth under fifteen feet. Wake surf boats should operate 200 feet offshore to minimize the wave impact on shore to allow the wave to break into their group components to an average height lower than the suggested limit of 11 inches in height. The rules going forward will include all power boats, but the wake surfing community needs to embrace their responsibility as operators to minimize the confrontations with other boats and people on shore. The conspicuous nature of wake surfing by generating a larger wake at a slower speed and staying in the area tends to draw attention to the activity. Sometimes the effected shoreline needs a break from the action, and they could move to a new location. The wake-surfers need to be sensitive to people on shore as everyone has a right to enjoy the water.

Acknowledgements

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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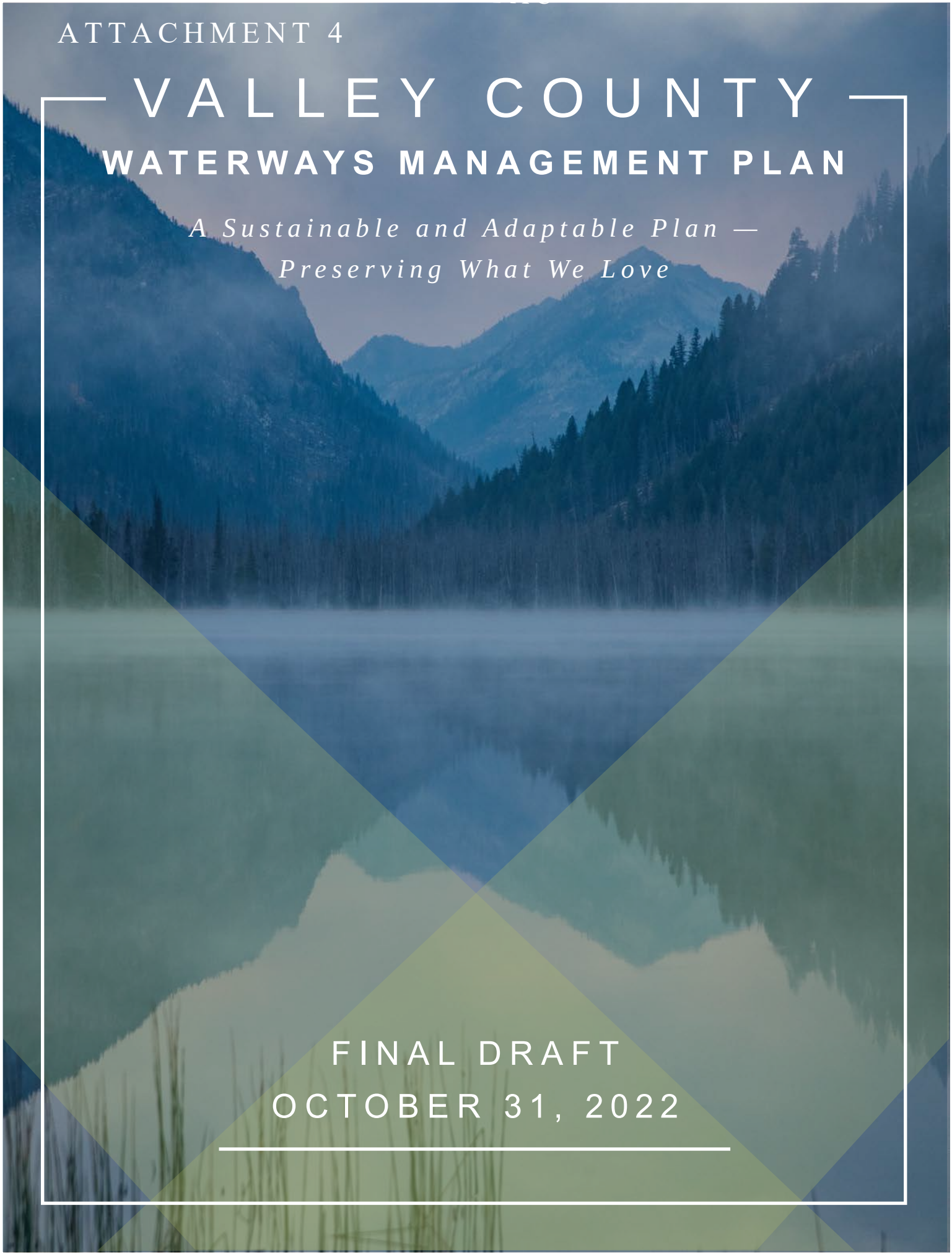
ATTACHMENT 4

VALLEY COUNTY

WATERWAYS MANAGEMENT PLAN

A Sustainable and Adaptable Plan —
Preserving What We Love



FINAL DRAFT

OCTOBER 31, 2022

acknowledgements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Donnelly Chamber of Commerce

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US Bureau of Reclamation - Snake River Area Office
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Idaho Department of Parks and Recreation - Ponderosa State Park
Idaho Department of Lands
Idaho Department of Fish and Game
Idaho Department of Environmental Quality
Valley County Recreation
Valley County Sheriff's Office
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Friends of Lake Cascade
Idaho Rural Water Association

VALLEY COUNTY

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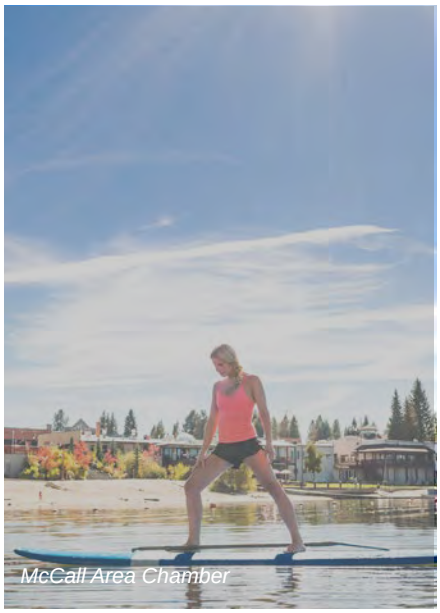

McCall Area Chamber


John Webster for Tamarack Resort

The purpose of the Waterways Management Plan...

is to provide a coordinated framework for decision-making to guide management and improvements of all waterways in Valley County. Implementation of specific projects, policies, and initiatives shall require approval by the Board of County Commissioners, City Councils of local municipalities, and/or the governing bodies of other partner respective jurisdictions.

BEA	Bureau of Economic Analysis
BMP	Best Management Practice
CDH	Central District Health
CWA	Clean Water Act
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDL	Idaho Department of Lands
IDPR	Idaho Parks and Recreation
IDWR	Idaho Department of Water Resources
KWP	Kelly's Whitewater Park
mg/L	Milligrams per liter
NRCS	National Resource Conservation Service
Reclamation	U.S. Bureau of Reclamation
TAG	Technical Advisory Group
TMDL	Total maximum daily loads
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
VSWCD	Valley Soil & Water Conservation District
WMA	Wildlife Management Areas

Cover Photo: Loon Lake. Jon Conti

Payette Lake. Case Conti Visuals

CHAPTER 1: SUMMARY

INTRODUCTION

Valley County is a mountainous paradise located in the west central mountains of Idaho, that offers numerous types of outdoor recreation activities. Maintaining ecosystem health and recreational opportunity on Valley County's lakes and rivers - collectively referred to in this Plan as waterways - is a high priority and value of Valley County. The waterways provide a source of clean drinking water, irrigation, aquatic habitat, and attractive recreation spaces. The community's resolve has been strengthened to create a cohesive decision-making structure for the future management of the County's waterways to represent strong Idaho values. This Valley County Waterways Management Plan (the Plan) addresses the desired future condition and management for all waterways across the County with additional strategic direction for Lake Cascade, Big Payette Lake, Warm Lake, alpine lakes, and North Fork of the Payette River. While important to the County, unique management direction was not warranted at this time for other waterways, such as Upper Payette Lake, Little Payette Lake, and Herrick Reservoir.

Comprehensive plans for the County and local municipal jurisdictions recognize the waterways as "special areas" as drinking water sources, wildlife habitat, quality public access, protection of shoreline, and local economic development.

NEED FOR THE PLAN

Valley County has a diverse array of waterway resources ranging from high-activity, motorized use reservoirs to small, backcountry destinations and esteemed river systems. Water plays a very important role in the quality of life and economic development opportunities for residents, second homeowners, recreation users, irrigation districts, and businesses. Valley County's waterways offer fishing, swimming, sailing, kayaking, power boating, wakeboarding, jet-skiing, canoeing, hiking, camping, and other recreational opportunities that contribute to the resiliency and lifestyle associated with living in a mountain community.

With its stunning mountain setting and vast recreation opportunities, Valley County has increasingly attracted residents and visitors alike. The County is transitioning from its traditional agrarian, timber harvesting, and mining roots to include a recreation destination-based economy. With this shift comes increased use of public lands, as well as land-use challenges and impacts of population and visitation growth. Uncertainly about the future of some public lands, concerns from residents, new lake developments (e.g., marinas), fluctuating water quality, soil erosion, recreation leases, changing recreational trends and technology, and recent regulations have prompted the need for management guidance of Valley County's waterways. This Plan reinforces the valuable partnerships between Valley County, the City of McCall, and other local, state, and federal jurisdictions for the sustainable management of their most important resource.

WHO USES THIS PLAN

Valley County and the respective jurisdictions will use this Plan to help guide future recreation management while considering environmental stewardship of the lakes, reservoirs, and rivers. The Plan provides guiding direction for future waterway management, land use standards, and best management practices (BMPs). Various agencies and partners can adopt and help implement portions of the Plan as relevant to their jurisdiction. The Plan incorporates high level best practices from land management agencies as well as other major recreation waterbodies across the nation within Idaho's legal framework.

PLAN OVERVIEW

- ***Outlines recommendations in partnership with other agencies for future management and policy considerations.***
- ***Provides guidelines oriented towards the health and safety of recreational users.***
- ***Provides recommendations for operations including enforcement.***
- ***Identifies science-based keystone indicators for future monitoring and adaptive management.***
- ***Provides general improvements needed to enhance the recreational experience on the waterways.***
- ***Identifies data gaps for future research.***

Donnelly Chamber of Commerce

GOALS OF THE WATERWAYS MANAGEMENT PLAN ARE TO:

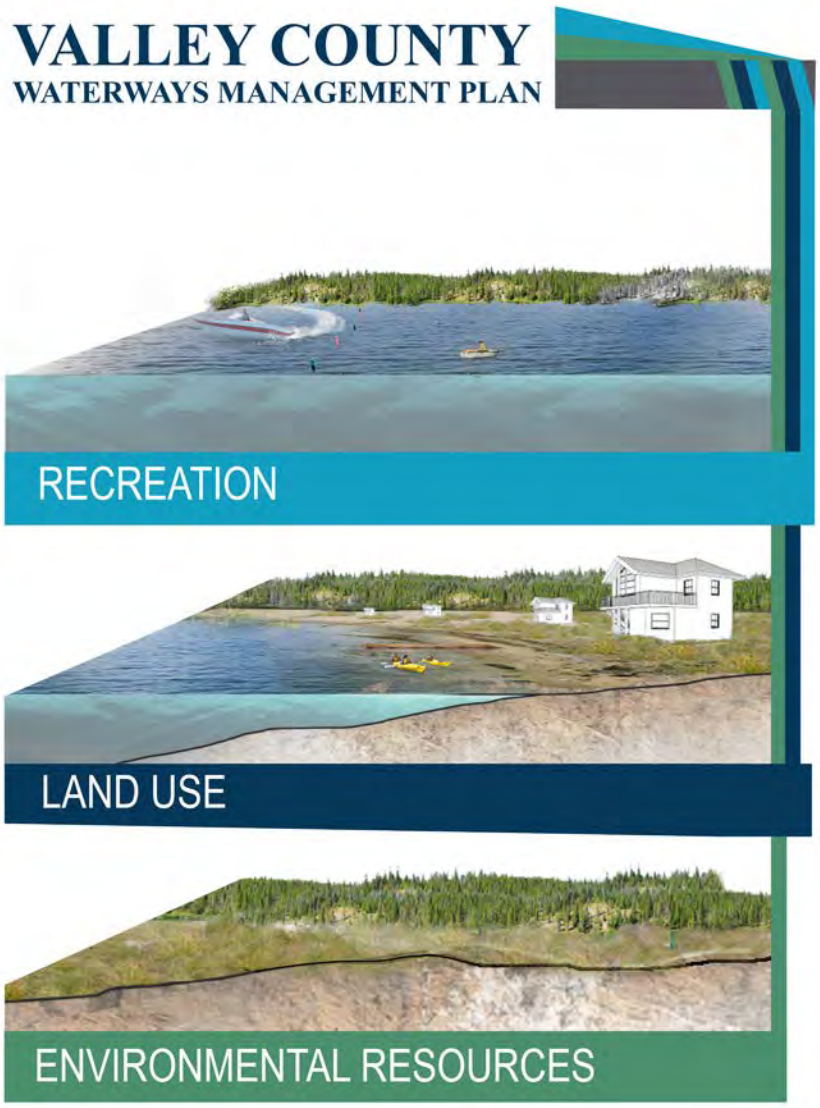
- Provide a framework for future decision making by defining a county-wide and city-wide vision for waterways management and identify waterway-specific desired future conditions and strategies for all uses of water.
- Provide diverse opportunities for recreational users of the County's lakes, reservoirs, and rivers.
- Balance ecosystem health with recreational experience by developing keystone indicators based on best available scientific data and existing research.
- Consider trends in recreation, visitation, population growth, and land use and management.
- Create an adaptable management structure to address continued visitation and changing water quality with monitoring and indicators for the implementation of data-driven best management practices and regulations to maintain the desired future conditions of each waterway.
- Identify priorities for short-term action and long-term adaptable implementation.
- Create a grassroots-based plan centered on our community, partners, committees, agencies, and leadership.

Chad Case

FRAMEWORK

Maintaining Valley County's high-quality waterways is a high priority and value of Valley County residents and visitors. The emerging tourism economy of Valley County and its cities depends on its waterways. These waterways also serve a growing population both recreationally and by providing drinking water. A framework will allow the community to adjust and preserve what locals and visitors cherish.

Three frameworks have been established to organize the Plan – recreation, land use, and environmental resources. However, none of these topics exist as a standalone component. They are interrelated with impacts and benefits to each other. Quality of life is intricately tied to natural landscapes and recreation, and the long-term future depends on the stewardship of water, energy, sensitive lands, and air quality. A critical outcome of this plan will be the ability to balance the protection of water resources with economic development objectives.



WHAT THE PLAN IS NOT:

The scope of the Waterways Management Plan does not result in any immediate restrictions or new regulations to waterways management. Agency partners were critical to the plan development, but any potential policy or rule changes would need to be adopted through separate processes. The planning effort relied on the best available data at the time and did not include collection of original environmental data collection or scientific efforts. Further, many of these efforts are underway by other agencies as funding and staffing allows.

A LIVING DOCUMENT

This Waterways Management Plan is designed to be an interactive, adaptable plan to be used by not only the County but any agency with management and/or resource oversight of the waterways. The planning process took place over four tasks. However, an ongoing Task 5 will be needed to implement the adaptive management program and to continually evaluate the keystone indicators. Based on any changes to the keystone indicators, priority strategies could be adjusted to meet the desired future condition of the waterways.

TASK 1
FOUNDATION

TASK 2
VISIONING & TRENDS

TASK 3
OPPORTUNITIES & CHOICES

TASK 4
RECOMMENDATIONS & ADAPTIVE PLAN

ONGOING TASK 5
"A LIVING DOCUMENT" THROUGH ADAPTIVE MANAGEMENT

BUILDING OFF PAST STRONG WATERWAY EFFORTS

The Waterways Management Plan acknowledges the work of previous and existing waterway efforts, some of which include:

- ***The Valley Soil and Water Conservation District regularly responds to various challenges facing water quality in the North Fork Payette River watershed. Tackling efforts to address land management; waves, erosion, and sedimentation; wetlands, aquatic vegetation, and fish habitat; wastewater: sewer, septic, and urban runoff; and lake storage.***
- ***The Valley County Waterways Advisory Committee is an appointed committee advising on maintenance and improvements of waterways.***
- ***Plans created with the assistance of previous working groups helped informed this Plan:***
  - ***The Watershed Advisory Groups - Idaho Department of Environmental Quality (IDEQ) convened groups during the development of water quality improvement plans and total maximum daily loads (TMDLs) for the Cascade Reservoir/North Fork Payette.***
  - ***The Big Payette Lake Water Quality Council, a State legislature established group that disbanded seven years after the passage of the Lake Management Plan.***

OUTREACH HIGHLIGHTS

The planning process for the Waterways Management Plan was co-managed by Valley County and City of McCall with collaborative input from many non-profit, federal, state, and local agencies.

PROJECT OUTREACH OVERVIEW

4 TAG Meetings

11 Stakeholder interviews

2 County and municipality joint worksessions

16 Agencies and Divisions represented on the TAG

150+ Intercept and boat count questionnaire hours by 22 volunteers over 2 years

5 Valley Soil and Water Conservation District Updates

300 Comments Public Draft Plan

30+ Steering Committee meetings

TECHNICAL ADVISORY GROUP MEETINGS

A Technical Advisory Group (TAG) was convened for this planning process and was made up of the many agency partners that are involved in the day-to-day management of the waterways or have an oversight role of the properties. They provided technical input to the development of the Plan, bringing together agency best management practices and a holistic view of the waterways management. The TAG included representation from the U.S. Forest Service (USFS), Idaho Department of Fish and Game (IDFG), Idaho Department of Lands (IDL), Friends of Lake Cascade, Idaho Department of Environmental Quality (IDEQ), U.S. Bureau of Reclamation (Reclamation), Valley Soil & Water Conservation District (VSWCD), Idaho Parks and Recreation (IDPR) - Ponderosa State Park and Lake Cascade State Park, Payette River Watermaster, and irrigation districts, among others. The group met four times to provide their input on the desired future condition, recommendations, and plan implementation.

PARTNER AND BUSINESS INTERVIEWS

Discussions with rental companies, parks, and recreation businesses took place during the summer of 2021. Key input included:

- *Recreation conflicts associated with key activities*
- *Education is key: Mapping and rules/ ethics*
- *Rental business was already growing, then grew even more with COVID*
- *Payette and Cascade are big enough for users; just need to consider how the areas are used*
- *Payette Lake: Concentration of users at Legacy Park Area*
- *Warm Lake: Erosion is multiple factors (higher water levels, shoreline trails, boats, wind, etc.)*
- *Lake Cascade: Harmful Algae Bloom occurring earlier, hurts tourism*

VISIONING QUESTIONNAIRE

The Waterways Management Plan planning process sought to understand visitor perceptions and satisfaction with their experiences on the water. During the summer of 2021, the public and visiting recreationalists were able to share their experiences and desired visions for the waterways. Two online questionnaires were available: An extensive visioning questionnaire was developed to begin to understand visitor-use patterns/activities, general challenges/concerns, and to gather input on the long-term vision for each waterway. It asked about all the major waterways in Valley County. There were 214 completed responses.

Logan Simpson

Donnelly Chamber of Commerce

BOAT COUNTS & VISITOR USE INTERCEPT QUESTIONNAIRE

A shorter intercept questionnaire asked about visitors' direct experiences during their visit. The intercept questionnaire was available online via QR code on signs at various boat ramps, on postcards at area businesses, and facilitated by volunteers on select days (as described below). There were 234 completed responses of which 164 response were collected during boat counts during the summer of 2021. A second intercept was conducted in the summer of 2022.

In an effort to specifically correlate visitor perceptions and satisfaction with the number of boats on the water, specific times and dates were identified to count the number of boats and simultaneously ask people about their perceptions that day. This was a large volunteer effort that involved over 22 volunteers and 150+ volunteer hours were attributed to the effort. The effort attempted to collect data on weekday and weekend time periods once during peak season (end of July) and once during non-peak season (mid-September). Weather and seasonal restrictions constrained some of the data collection, which included: stormy weather on the weekday time period in July, lower than normal water levels on Payette Lake in September, lower water levels and a Harmful Algae Bloom health advisory on Lake Cascade on August 13, 2021.

QUESTIONNAIRE RESULTS

Visitation (in the past 12 months)?

	0 days	1-5 days	6-15 days	16-25 days	25+ days	# of Responses
Big Payette Lake	17.2%	18.9%	13.0%	12.4%	38.5%	169
Lake Cascade	40.4%	27.8%	12.6%	5.3%	13.9%	151
Warm Lake	57.2%	21.1%	5.3%	3.9%	12.5%	152
Upper Payette Lake/Little Payette Lake	47.3%	32.2%	15.8%	4.1%	0.7%	146
Horsethief, Herrick, Boulder Meadows, and Deadwood Reservoirs	69.9%	23.8%	6.3%	0%	0%	143
Alpine Lakes	47.2%	26.4%	18.1%	4.2%	4.2%	144
River above Lake Cascade	58.7%	23.9%	13.0%	2.9%	1.4%	138
River below Lake Cascade	60.6%	25.8%	9.8%	1.5%	2.3%	132

Typical Visitation Groups

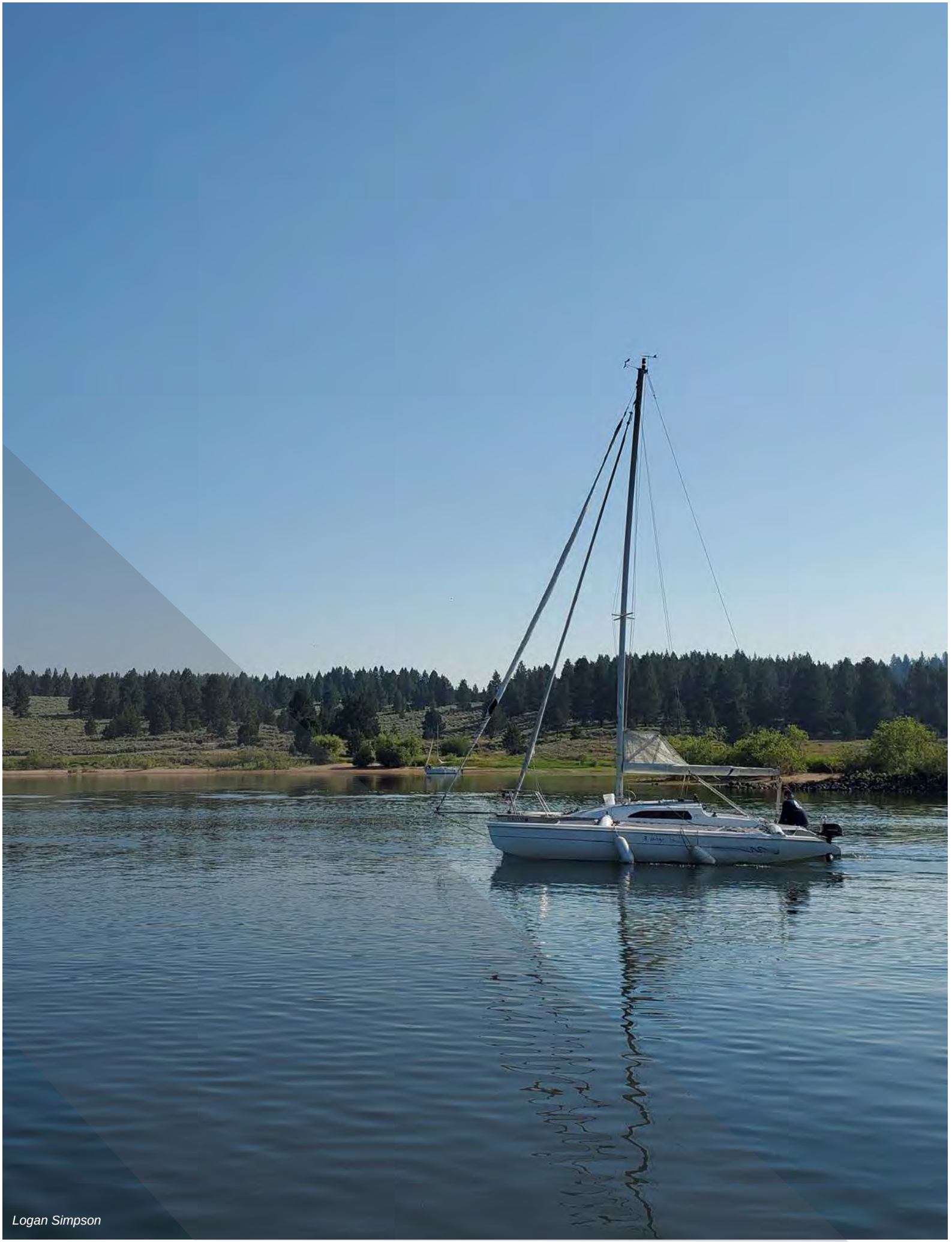
	Just myself	One other person	A group of friends	A group of family including kids	Canine friends	Total checks
Big Payette Lake	13.7%	21.8%	22.7%	25.5%	16.2%	357
Lake Cascade	9.9%	25.7%	24.6%	23.6%	16.2%	191
Warm Lake	12.8%	22.2%	21.1%	26.1%	17.8%	180
Upper Payette Lake/Little Payette Lake	14.3%	29.8%	21.1%	16.1%	18.6%	161
Horsethief, Herrick, Boulder Meadows, and Deadwood Reservoirs	18%	28.8%	15.3%	19.8%	18%	111
Alpine Lakes	15.9%	33%	19.2%	13.7%	18.1%	182
River above Lake Cascade	14.8%	28.9%	23.4%	14.8%	18%	128
River below Lake Cascade	15.3%	28.8%	24.6%	18.6%	12.7%	118

Overall Experience

Waterway	Poor	Neutral	Excellent
Big Payette Lake	1.9%	14.6%	83.5%
Lake Cascade	3.0%	22.4%	74.6%
Warm Lake	0.0%	0.0%	100.0%

Feeling of Crowdedness

Waterway	Not at all crowded	Slightly crowded	Moderately crowded	Extremely crowded	No opinion
Big Payette Lake	33.3%	32.1%	20.8%	13.2%	0.6%
Lake Cascade	41.8%	32.8%	14.9%	9.0%	1.5%
Warm Lake	25.0%	50.0%	25.0%	0.0%	0.0%



Logan Simpson

CHAPTER 2: FOCUS AREA CURRENT TRENDS

INTRODUCTION

Based on the best available data, an overview of baseline data for the area was completed. The following chapter describes the qualitative understanding of the unique issues and challenges that affect the waterways. An assessment of keystone is also integrated. The full Current Trends Report is provided under separate cover.

> *The combination of two marinas, boat launch, public beach, fuel station, swimmers and non-motorized boat users concentrates activity in the Legacy Park Area.*
>
> *- Mile High Marina Stakeholder Comment*

Chad Case

RECREATION

WHY DOES IT MATTER

It would be difficult to overstate the opportunities for outdoor recreation in and around Valley County's waterways included in this Plan. These waterways are a key source of pride for locals and serve a population from the region and beyond. They provide immense aesthetic and mental health benefits and recreational opportunities, such as swimming and boating, which help support the local tourism economy and keep local taxes lower. As the tourism economy of Valley County and its cities grows, the importance of the waterways is highlighted. As Valley County's waterways are seeing an increase in visitation, recreation trends are also shifting. New technology and types of watercraft are changing how the waterways are used. Paddleboarding has emerged as a popular activity, wakesurfing has changed how power boats use the waterways, and boat rentals - of all types -are increasing.

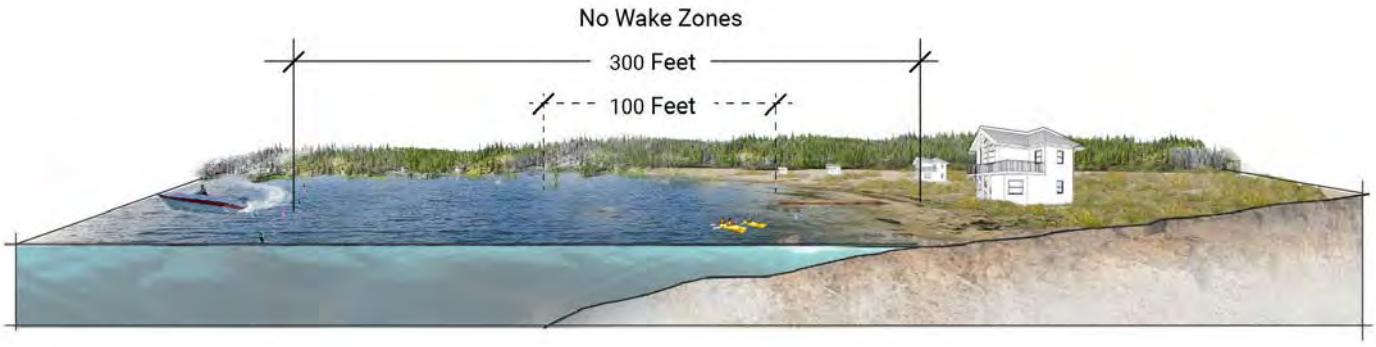
In addition to water-based forms of recreation, nearly every waterway location offers camping, hiking, wildlife viewing, birding, and biking along the shores. The waterways and surrounding areas also provide habitat for a diversity of wildlife and fish species. Although recreation activities and access to waterways should be maintained, increased use of the waterways in Valley County require heightened awareness and development of a long-term plan that seeks to balance the demands of recreational use with the needs of maintaining a healthy environment.

MANAGEMENT GUIDANCE

The waterways and their various functions are managed by different entities, including the County, Reclamation, IDPR, IDL, IDFG, and the USFS. The IDEQ sporadically monitors water quality. Lake Cascade State Park and Ponderosa State Park are located at Lake Cascade and Big Payette Lake, respectively. The Idaho Parks and Recreation Department manages most of the waterways' campgrounds and trails. The IDFG manages fishery resources and implements fishing regulations, including stocking some fish species in certain waterbodies.

The 2020 Valley County Waterways Ordinance (Ordinance #20-11) stipulates operational rules, regulations, and behavioral standards, including no wake zones for public waterways in Valley County. The ordinance establishes a 300-foot no wake zone for Big Payette Lake, Upper Payette Lake, and Lake Cascade with certain exclusion areas. Idaho State Code 67-7077 no wake rules apply within 100 feet of a dock, person, or structure, including within the Valley County Waterways Ordinance 300-foot no wake zone.

CURRENT WATERWAYS MANAGEMENT

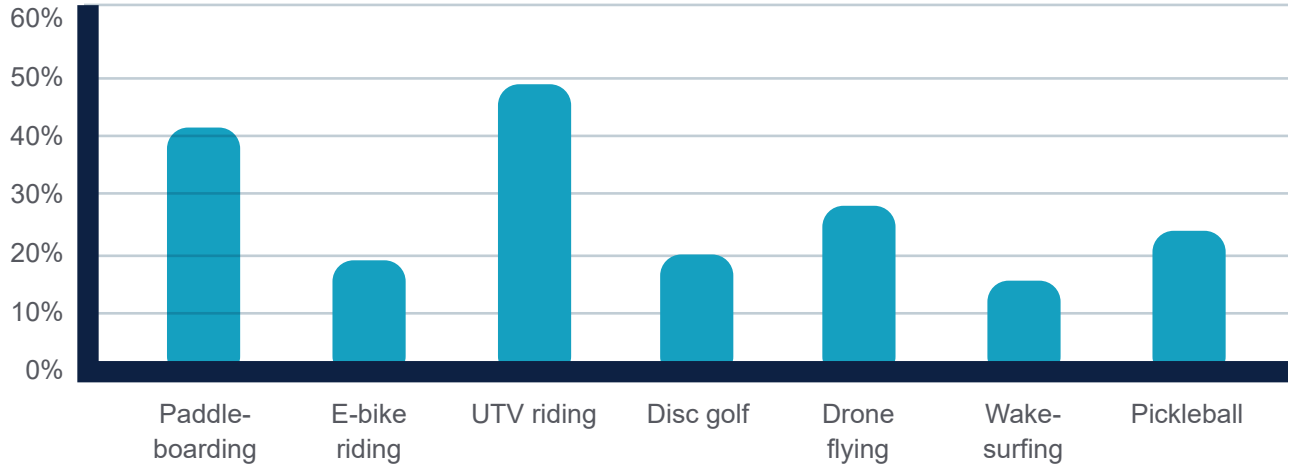


GROWTH IN RECREATION ACTIVITIES

The Idaho Statewide Comprehensive Outdoor Recreation Plan from 2018 highlights the importance of outdoor recreation to Idaho and summarizes demand of all types of outdoor recreation across Idaho. Through this process IDPR surveyed recreation providers, public land managers, and the general public. Focus groups with recreation providers in Valley County also identified paddleboarding and wake surfing as two of the top trending outdoor activities.

TRENDING OUTDOOR RECREATION ACTIVITIES IN IDAHO

Idaho SCORP 2018: Outdoor Recreation Provider Online Survey



Stand up paddleboarding has increased significantly, due to its ease of learning and low cost to entry. Recreation providers can accommodate the activity without having to add large facilities. Many park concessionaires and retailers provide rental boards. Wake surfing has also grown in popularity in Idaho as wake surfing technology and equipment continues to evolve and become more available. Unlike wakeboarding, wakesurfing involves catching a ride on top of the wake created by the boat's wake. According to the Idaho Department of Parks and Recreation, 7,811 boat licensees selected Valley County as either their primary or secondary use location in 2021.

Growth has occurred in shoreline recreation uses devoted to camping, picnicking, swimming, and fishing. Over the past five years, both Lake Cascade and Ponderosa State Parks have witnessed a steady increase in camping and day use from both Idaho residents and out-of-state visitors.

During the peak of the season from late June to Labor Day, onshore recreation facilities around some County waterways are strained.

> *A significant number of people using the North Beach lot are day users of the beach and are not paddlers renting from the company. With the lot full by 11 am, people continue up the Waterway to River Bend or over the bridge, areas which are equally impacted.*
>
> ***Stef Woods, owner of Backwoods Adventures Canoe and Kayak Rentals***

Chad Case

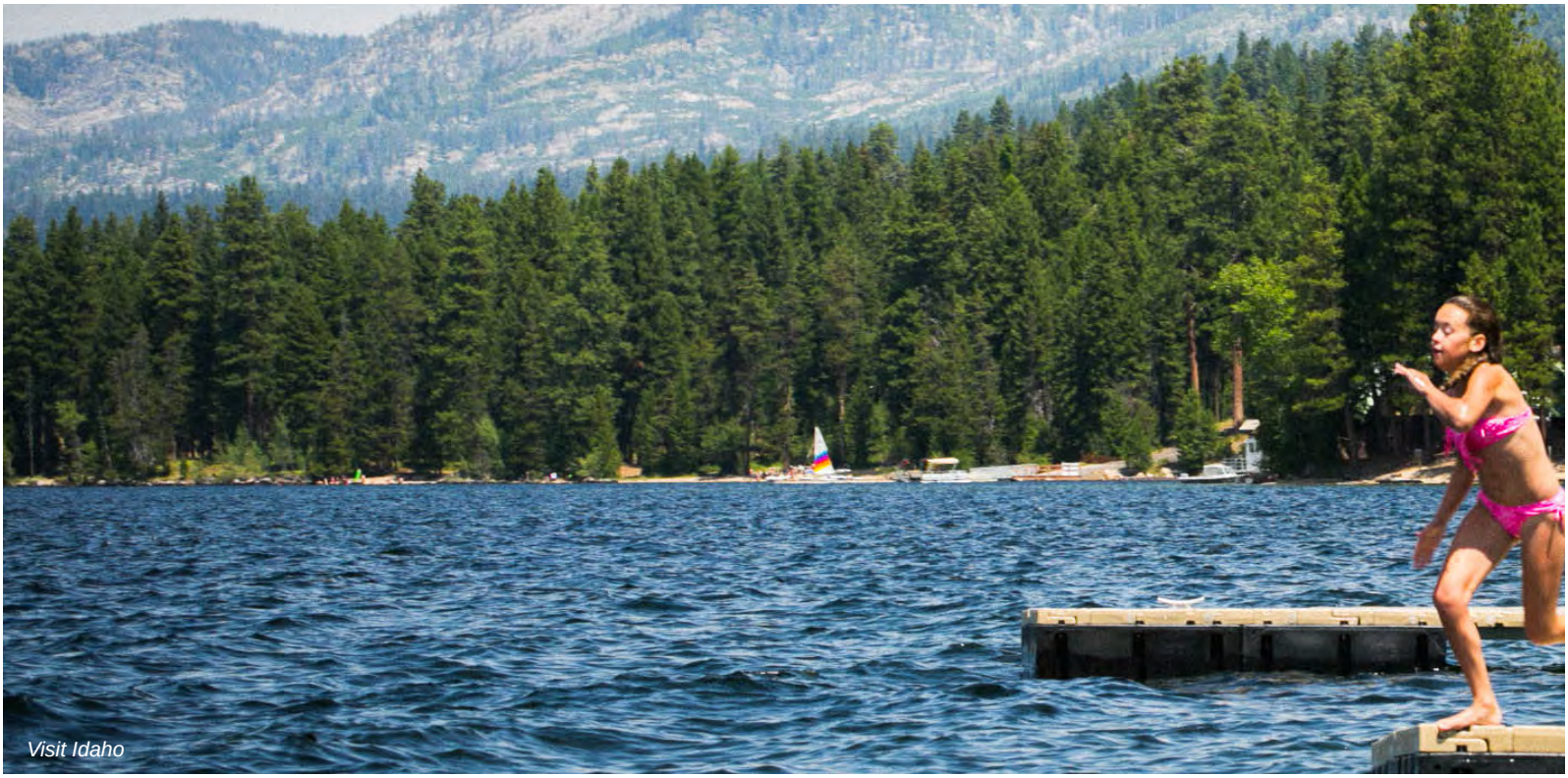
ECONOMIC IMPACT

According to the Bureau of Economic Analysis (BEA), outdoor recreation accounts for $2.5 billion or 3 percent of Idaho's economy and supports 36,537 jobs. The recently released Gross Domestic Product numbers by the BEA highlights the importance of boating and fishing to Idaho's economy. Idaho continues to see a greater increase (1.2 percent growth) in the outdoor recreation industry compared to the rest of the United States (0.4 percent growth) (apps.bea.gov 2021).

REVENUE GENERATED BY RECREATION ACTIVITIES IN IDAHO

Bureau of Economic Analysis

ACTIVITY	GROSS DOMESTIC PRODUCT (2019)
RVing	$195,316,000
Hunting/Shooting/Trapping	$149,240,000
Boating/Fishing	$141,438,000
Equestrian Use	$125,925,000
Snow Activities	$57,721,000
Motorcycling/ATVing	$55,173,000
Climbing/Tent Camping	$20,917,000
Bicycling	$11,177,000

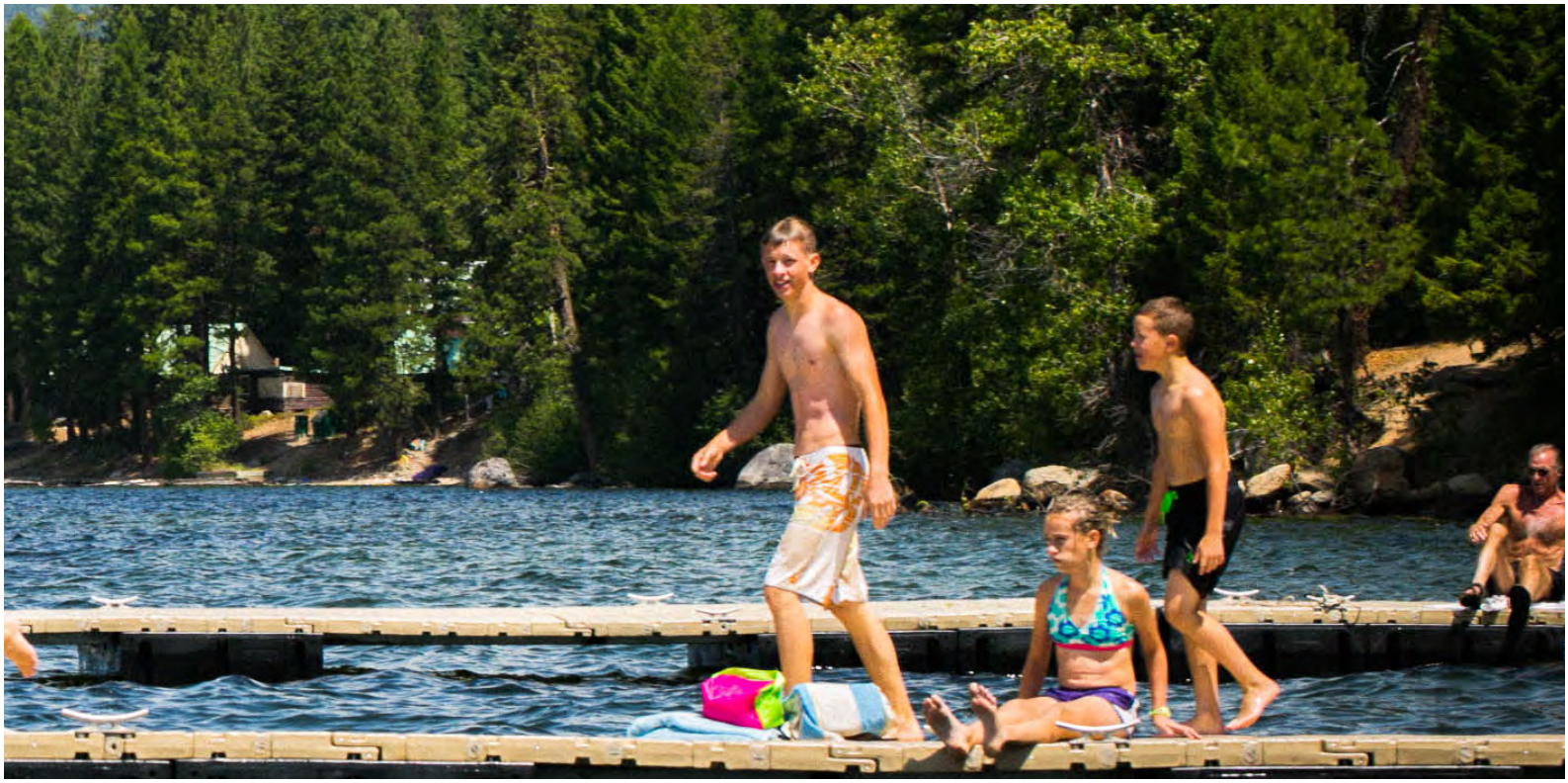

Visit Idaho

CARRYING CAPACITY

Spatial Capacity – Capacity in regard to the physical constraints leading to space-related impacts. In other words, spatial capacity is the number of boats that can comfortably conduct their chosen recreational activity in a specific area of a waterway. For this analysis boats are considered motorized boats, capable of generating wake, active on the water at one time. A lake's shape and water level will also affect the physical constraints on use. An irregular shoreline limits the amount of usable boating surface. The water level (aka pool level) at Lake Cascade fluctuates significantly and changes the amount of surface acres available to recreate on a seasonal basis. In determining what "too much" means it is important to understand that no carrying capacity formula is right for every waterway. One factor to consider is the ecological or aesthetic value of the lake, which may not be captured in a boater survey. Case studies range from 4 boats per acre to 40 motorized boats per acre.

SPATIAL CAPACITY ANALYSIS

	BIG PAYETTE LAKE	LAKE CASCADE	WARM LAKE
Observed motorized boats at one time (High Use)	**76**	**161**	**6**
Observed motorized boats at one time (Low Use)	**20**	**35**	**2**
Wake Area (Acres) at high pool	**4,326**	**21,504**	**224** (between 11am-6pm)
No wake Area (Acres) at high pool	**771** (300 feet from shoreline, with exclusions)	**1,952** (300 feet from shoreline, with exclusions)	**423** (between 6pm- 11am) **199** (between 11am-6pm)



Social Capacity – Capacity in regard to visitors' perception of crowding. Social capacity is defined by the specific user groups of each specific lake. Social capacity may but not always impact the users' enjoyment of the recreational resources. Social capacity is reached when conflict arises or when users choose not to utilize the resource. The demand for various activities and the condition of the lakes and reservoirs must be considered to set realistic goals and standards.

Facility Capacity – Capacity in regard to the ability of infrastructure to support the demand of various recreation user groups. Considerations include parking lots, marina capacity, boat launches, traffic/ circulation, and camping with boating access. Staffing for education, management, maintenance, and enforcement should also be considered.

SOCIAL CAPACITY ANALYSIS

	BIG PAYETTE LAKE	LAKE CASCADE	WARM LAKE
Observed motorized boats at one time (High Use)	**76**	**161**	**6**
Observed motorized boats at one time (Low Use)	**20**	**35**	**2**
Perception Survey (High Use)	**Experience Excellent.** Slight to Moderate with Areas of extreme crowding (Put-in Areas and North Beach).	**Experience Excellent.** Slight Crowding. Areas of extreme crowding associated with unsafe behavior and boat ramp.	**Experience Excellent.** Not Crowded.
Perception Survey (Low Use)	**Experience Excellent.** No to Slight Crowding.	**Experience High.** Not Crowded.	**Experience Excellent** Not Crowded.


Chad Chase

LAND USE

WHY DOES IT MATTER

The use of the land immediately adjacent to the Valley County waterways and within the watershed has a substantial impact on the natural and recreational value of the waterways and to the domestic water supply and irrigation. Continued growth in the region, increased demand for shoreline development in general, and increased demand for recreational access to the water is expected. Land uses surrounding the waterways include a variety of federal, state, and local governments, as well as privately held land. Each has an influence on the recreation experience and water quality to varying degrees.

The waterways are valued for the inherent beauty of their natural environment and are appreciated as part of a larger natural ecosystem. Development can substantially diminish the environmental attributes of these waterways. While the region has long been a magnet for visitors and second homeowners, that dynamic has increased with the development of high-end residential communities and resorts in the past ten years, including Tamarack Resort, Jug Mountain Ranch, Blackhawk on the River, and Whitetail. Especially during the COVID pandemic, an increasing number of people have moved or decided to spend more time in the area as many more people are able to work remotely.

Of the 2,354,048 acres of land in Valley County, 2,147,983 acres are under federal, state, or county management. The remaining 206,065 acres (8.7%) are privately owned (Valley County 2018). 88% of Valley County is within portions of three National Forests: the Boise, Payette, and Salmon/Challis.

MANAGEMENT GUIDANCE

In the State of Idaho, authority for regulating land uses is delegated to local jurisdictions: Valley County and the cities of Cascade, Donnelly, and McCall. Local governments also coordinate with federal, state, and regional agencies in the review of development impacts on waterways including floodplain management, stormwater management, wetland area protection, and domestic water and septic systems.

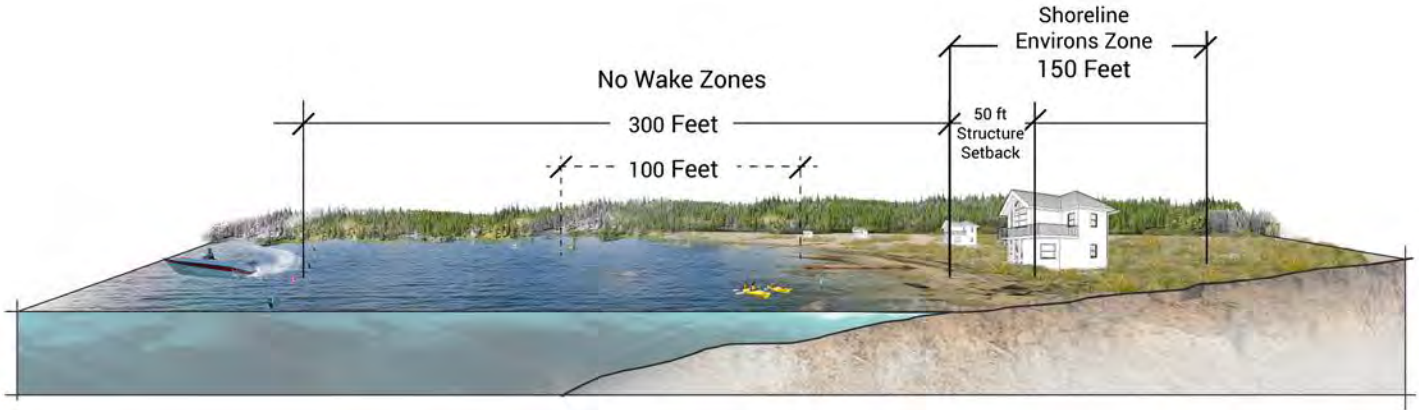
There are many obligations related to water use and storage operations of the water come from adjancent lands, including agricultural water contracts, fish augmentation flow, flood control, power generation and drinking water supply.

REGULATORY GUIDANCE

The Valley County Code requires a conditional use permit for most land uses, except agriculture, single family residences, and some public uses. All residential buildings are required to be set back at least 30 feet from high water lines, and all other buildings are required to be at least 100 feet set back from high water lines. Allowable residential lot size is dependent on the type of water and sewer system available with a minimum of one acre required for a residence served by a septic system and individual well.

All conditional uses require the preparation of an Impact Report to address the potential environmental, economic, and social impacts of proposed uses and how these impacts are to be minimized or mitigated. Included are issues important to waterside development: surface water drainage and quality; disturbance of wetlands; flood-prone areas; vegetation removal; and soil, slope, and embankment disturbance and stability.

For properties within the McCall Area of City Impact, Valley County adopted the same codes for Impact Area (County) as the City. For the City of McCall Impact Area, the City of McCall and Valley County have adopted an overlay district to protect the water quality and aesthetic views of Big Payette Lake and the North Fork of the Payette River. The Shoreline and River Environs Zone (150' from high water mark) requires design review of all properties adjacent to the waterways and establishes a 50 foot minimum development setback from the lake and river. Within the setback, structures, patios, walls, lawns, and fences are prohibited. To protect water quality, a stormwater management plan consistent with best management practices is required for all building permit applications. In addition, wildlife habitat, wetlands, and views are to be protected.

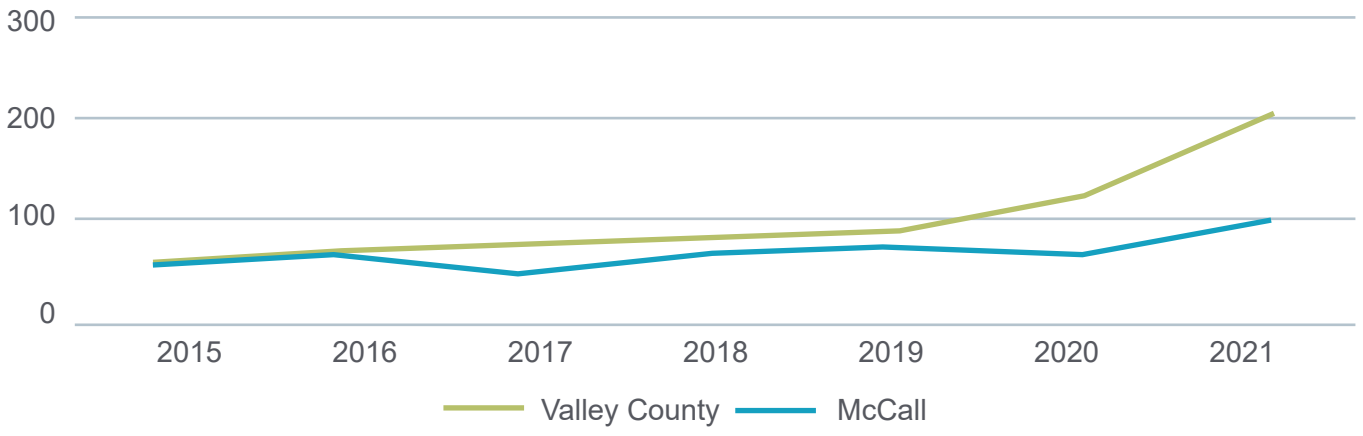


POPULATION GROWTH

Valley County has witnessed substantial population growth, 19 percent, between 2010 and 2020. During the same period, McCall grew by 28 percent. This growth is reflected in the number of residential building permits. Both Valley County and the City of McCall have experienced significant spikes in building permits, 58 percent and 54 percent respectively, in recent years. The population of Treasure Valley alone could pass 1 million people in the next 20 years, demonstrating that resources and visitation need to be managed now. Over the past six years, there have been over 80 shoreline permits issued in the McCall Area Shoreline and River Environs District, including an average of seven per year for new construction, mostly larger homes replacing original cabins.

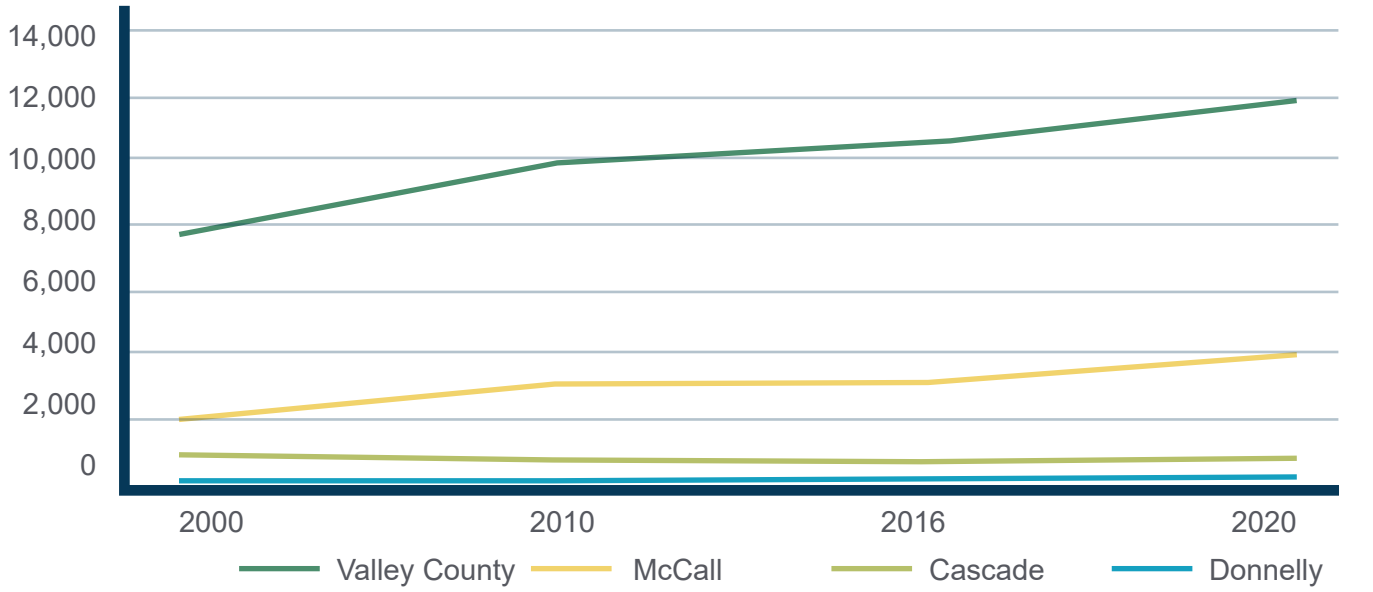
BUILDING PERMITS

Valley County and City of McCall Building Department, August 2021



POPULATION

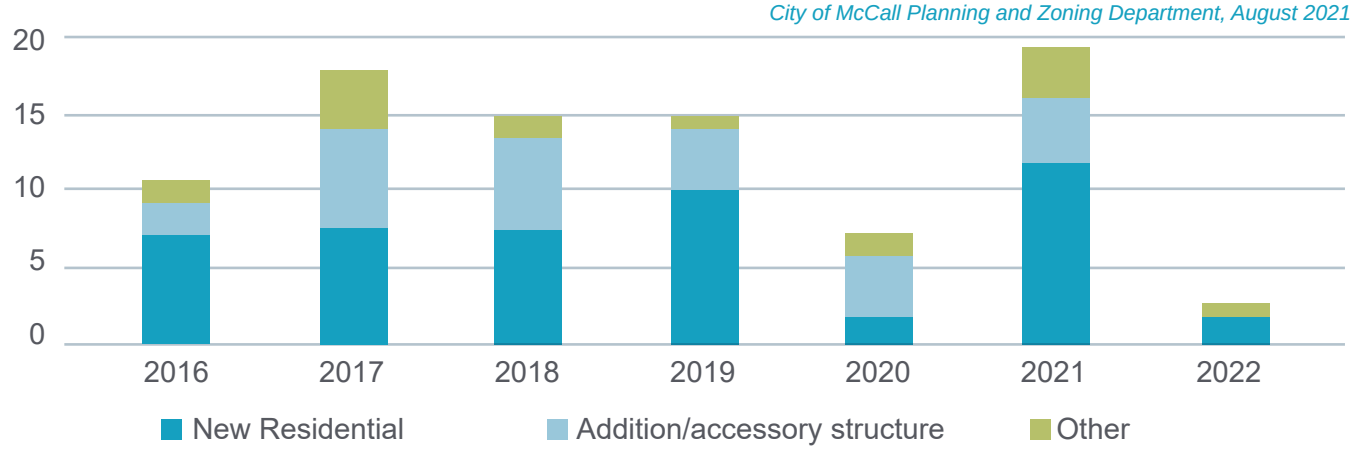
U.S. Census Bureau



The population of Treasure Valley alone could pass 1 million people in the next 20 years, demonstrating that resources and visitation need to be managed now.

SHORELINE PERMITS (MCCALL AREA)

City of McCall Planning and Zoning Department, August 2021



Payette Lake. Case Conti Visuals

LAND USE IMPACTS ON THE WATERWAYS

Water Quality – Pressure from changing land use activities can result in the mobilization and loading of nutrients (nitrates and phosphorus) to aquatic ecosystems via sediment, increased runoff, the application of fertilizers, faulty septic systems, and altered landscape (United Payette 2021). The cumulative effects of increased nutrient loading are typically highly detrimental to fresh-water lakes and streams. Strict adherence to good conservation practices can mitigate these negative impacts.

The water quality of Lake Cascade and Big Payette Lake is compromised by runoff from the surrounding land uses. Expected growth and development will further exacerbate these impacts. Contributing factors include:

- On site septic systems located proximate to waterways and the potential release of nitrogen and phosphorous into surface waters if these systems are not maintained;
- Pathogen and nutrient-laden waste generated by pets and livestock;
- Sediment, pesticides, and pathogen loads from crop production/agricultural and livestock grazing;
- Hydrocarbons, pesticides, nutrients, pathogens, heavy metals, and thermal pollution from urban and landscape run-off and drainage systems;
- Dust and hydrocarbons from roads;
- Sediment, salt, and oil runoff released from roads, pavement, and other impervious surfaces;
- Sediment loads from land erosion and loss of vegetative cover caused by timber harvesting and wildfire burns; and
- Increases in residential water use for domestic and landscaping needs (including aesthetic ponds) results in a reduction in water quantity available in the rivers, and also reduces water quality (i.e. temperature).

Recreation – Land uses surrounding the waterways influence the quality of the recreation experience on, and adjacent to, the water. The adequacy, location, maintenance, and safety of land-based support facilities for recreational activities are important in the enjoyment of the waterways. Considerations include the adequacy of:

- Public land for accessing the waterways, such as boat launch areas, day use facilities, and beaches;
- Facilities that support recreational activities, including restrooms, signage, and refuse disposal;
- Parking and roads to meet user demand; and
- The balance of access and facilities distribution with lake congestion or choke point areas.

Environmental Resources – The waterways are valued for the inherent beauty of their natural environment and are appreciated as part of a larger natural ecosystem. Overly developed water edges impact the waterways in the following ways:

- They create physical and visual barriers between the water and its watershed with a loss in the authenticity of the natural system.
- They cause habitat loss and fragmentation for indigenous wildlife species.
- They replace natural filtering wetlands vegetation with buildings and fertilized landscaping.
- They modify the natural landform of the shoreline with walls and severe topographical changes.
- They introduce activity, noise, and lights to a naturally quiet and peaceful environment free from light pollution at night.
- They introduce septic systems close to the shoreline.


Logan Simpson

ENVIRONMENTAL RESOURCES

WHY DOES IT MATTER

The waterways in Valley County are a very valuable environmental resource, but they are only beneficial if they are clean and safe. Big Payette Lake, Lake Cascade, Warm Lake, and their tributary rivers and creeks provide important habitat to cold water aquatic life and support salmonid spawning.

However, human activities, as described previously, can cause adverse impacts to waterways to the point where they can no longer provide the beneficial uses that we expect and have enjoyed in the past. Activities that occur on the land adjacent to the lakes and streams and throughout the watershed affect water quality and can create hazardous and toxic conditions for humans and animals.

The effects of climate change and prolonged drought may require conservation measures to meet designated water use obligations and water quality and quantity goals.

MANAGEMENT GUIDANCE

Many of the water quality issues associated with the waterways have been brought to light as a result of assessments by the IDEQ mandated by the federal Clean Water Act (CWA). This Act requires that states and tribes restore and maintain the chemical, physical, and biological integrity of the nation's waters. Section 303(d) of the CWA requires publication of a list of impaired water bodies that do not meet water quality standards and the development of total maximum daily loads (TMDL) for pollutants that are causing impairments. A TMDL is an estimation of the maximum pollutant amount that can be present in a waterbody and still allow that waterbody to meet water quality standards for a specific beneficial use.

Of the waterways included in this Plan and their tributaries, the IDEQ has set TMDLs for Lake Cascade, the West Mountain tributaries to Lake Cascade, Gold Fork River, Boulder Creek, Willow Creek, Mud Creek, North Fork Payette River, tributaries to Big Payette Lake, and Box Creek (IDEQ 2018). A Watershed Management Plan is in place for Lake Cascade and TMDLs are reviewed every five years to assess if conditions are improving, declining, or remaining stable. The last TMDL review for the Lake Cascade Watershed was completed in 2018 and the last TMDL review for the North Fork Payette River Watershed was completed in 2012. Specifics by waterway are shared in following sections. On a local level, the Valley County Waterways Ordinance includes a regulation against discharging sewage, garbage, fuel, and other materials directly into the waterways. However, it does not address other practices that could help protect the environmental qualities in and around the waterways.

Microscopic view of Cyanobacteria including Gloeotrichia (left) and Dolichospermum and Aphanizomenon (right). Lenard Long

ENVIRONMENTAL CONCERNS

There are several environmental concerns that affect the ability of the Valley County waterways to provide habitat for fish and other aquatic species, safe water for recreation, and clean drinking water. The following is a description of the water quality issues that are current concerns in Valley County.

ALGAL BLOOMS

Phytoplankton are free-floating microorganisms found in lakes, streams, and oceans that convert sunlight into energy through photosynthesis. They are an important part of the aquatic food chain. The types of phytoplankton include algae, cyanobacteria, protist, and diatoms. Although not technically algae, cyanobacteria is commonly known as “blue-green” or “toxic” algae. When it grows excessively it becomes visible to the naked eye and can release toxins into the surrounding water or air making it harmful to people, animals, fish, and other parts of the ecosystem.

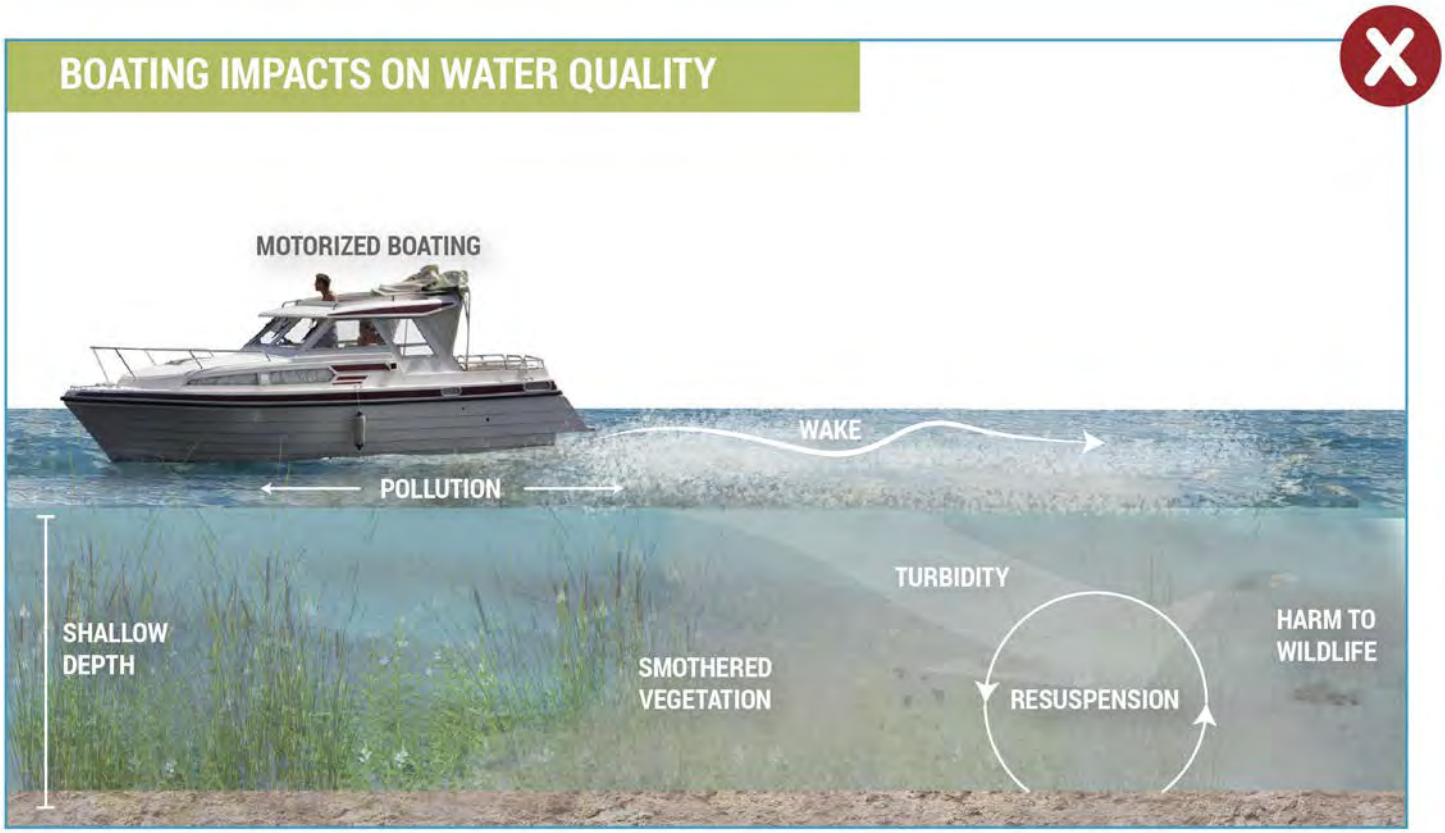
There are many adverse environmental impacts of excessive blue-green algae growth (harmful algal blooms). The toxins that are released can cause skin irritation, and if the water is ingested, they can cause gastrointestinal illness and liver damage in humans and death in animals. As the algae die, they sink to the bottom of the waterbody, decompose, and remove oxygen from the water in the process. The pH of the water can also be affected due to the release of acid and base compounds during respiration and photosynthesis. This depletion of dissolved oxygen and change in pH is harmful to fish and other aquatic organisms. Large algal blooms can also block sunlight from reaching organisms deeper in the waterbody and cause unpleasant odors.

Harmful algal blooms are caused by the presence of excessive nutrients and can be exacerbated by warmer water temperatures and slow-moving water. Nitrogen and phosphorus are the primary nutrients of concern. Since some types of cyanobacteria can utilize atmospheric nitrogen as a source of growth, phosphorous is most often the limiting factor. Algal blooms are a sign of premature eutrophication of lakes due to excess nutrients. Eutrophication is the process by which a waterbody becomes enriched in dissolved nutrients (e.g., phosphates), stimulating the growth of aquatic plants and usually resulting in the depletion of dissolved oxygen.

Phosphorus occurs naturally in the environment within soils and certain types of rocks. Anthropogenic

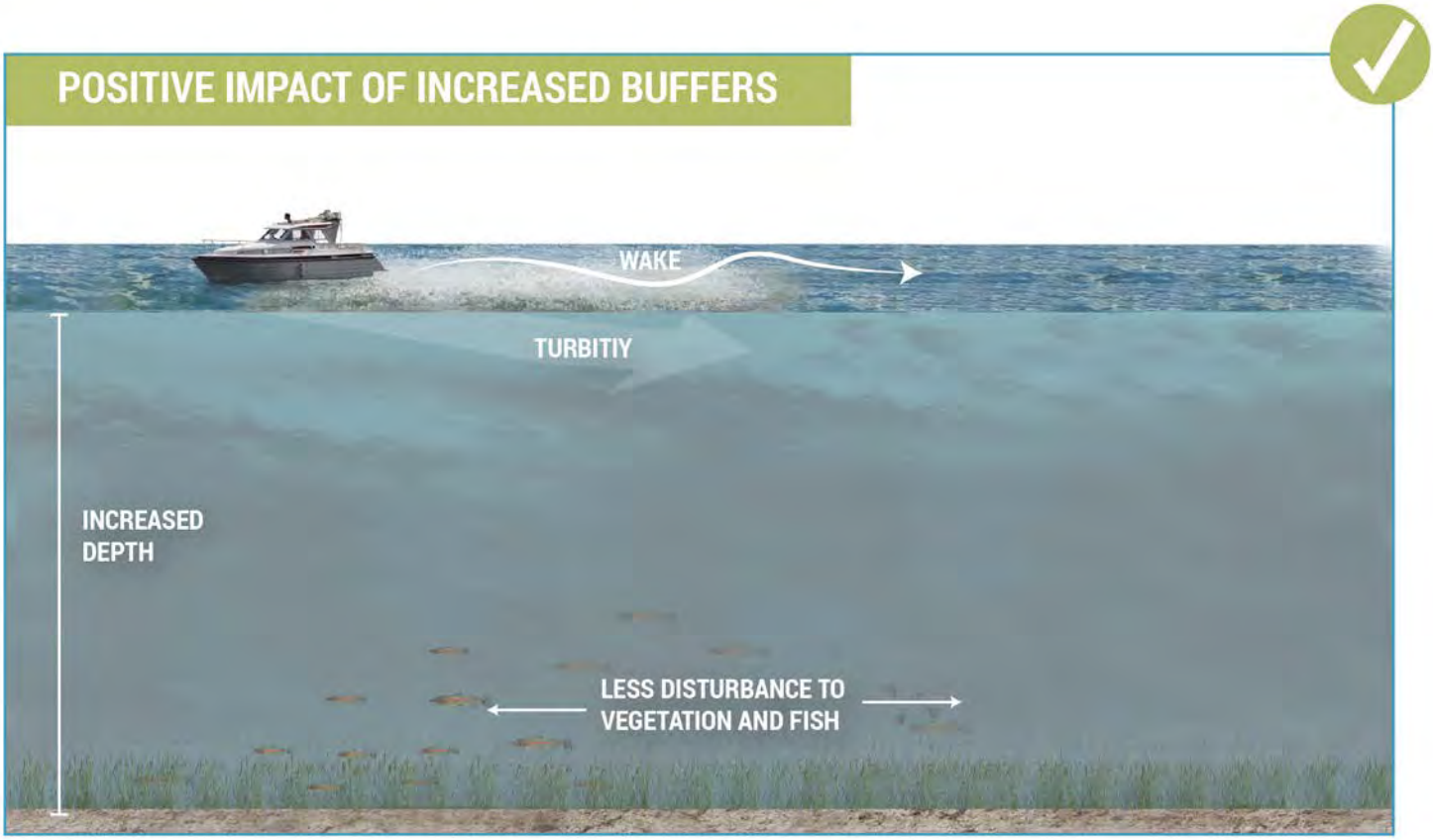
(human-caused) sources of phosphorus include fertilizers, detergents, wastewater, erosion, and livestock grazing. Past studies and research in Valley County have shown that waterways are vulnerable to water quality degradation from anthropogenic activities, including development. A study of phosphorus loading around Lake Cascade found that due to the limited movement of phosphorus in sandy soils there was potential for phosphorus contamination from residential septic systems if they were installed within 13 meters of a water course or installed into the seasonal or permanent water table (Zimmer, 1983). Livestock grazing can contribute both phosphorus and nitrogen to waterways from feces and soil erosion that is carried to lakes and rivers by stormwater runoff. Grazed watersheds have been found to contribute 10 to 50 times more phosphorus to receiving waters compared to forested or ungrazed watersheds (Duda, 1983) (Saxton, 1983).

There are several metrics used to measure the potential for harmful algae blooms, including concentrations of phosphorus, chlorophyll-*a*, and dissolved oxygen; water clarity measured by Secchi transparency; and measurements of pH. Chlorophyll-*a* is the primary photosynthetic pigment of phytoplankton and is used as an estimator of phytoplanktonic biomass.



REDUCING IMPACTS OF BOATING

Although no wake zones are typically based on the horizontal distance from the shore or other features of concern, there is scientific support for adding no wake zones based on vertical depth of the waterbody. A 1994 study by the Corps of Engineers investigated the relationship between boat traffic and sediment resuspension and found that the amount of sediment resuspension varied with water depth and sediment type. Silt substrates were observed to have the highest amount of sediment resuspension in water depths of three feet and no resuspension seen at 8 feet depth (U.S. Army Corps of Engineers, 1994). Additional studies have also found that the highest amount of sediment resuspension arises when boats are operating in waters less than around 8 feet deep (Yousef, 1974), (Cucinski, 1982) (Klein, 1997). Theoretical boat slip streams show that motorboats have potential to affect bed sediments to a depth of 33 feet depending on speed and angle of the trim angle of the propeller. However, at slipstream velocities of less than 0.25 m/s (0.6 mph) this depth is reduced to less than 4 m or approximately 12 feet (Ray, 2020). A 2003 study combined theoretical and experimental investigation of hydrodynamic impacts of recreational watercraft in shallow waterbodies and found that there was minimum potential for impact at water depths greater than 9 feet in a fine sand bed lake and 15 feet in a silt bed lake. Although impact varies depending on boat size, engine size, speed, and substrate type, a literature review by Wisconsin DNR noted that few impacts have been found at depths greater than 10 feet (Asplund, 2000). Thus, adding no wake zones in areas with depths less than 10 feet could be implemented to reduce the resuspension of bottom sediments and subsequent nutrient loading.



SEDIMENTATION

Sediment originates from the erosion of rocks and soils and is the most common nonpoint source pollutant that affects rivers, streams, and lakes. Nonpoint source pollution comes from many diffuse sources rather than from an easily identifiable single source (e.g., sewage treatment plant or industrial source). Elevated levels of suspended sediment and bedload sediment are harmful to fish, prevent plant growth, and are major sources of phosphorus. Sediment deposited at the bottom of lakes can continuously release phosphorus causing eutrophication even while external inputs of nutrient loading are reduced.

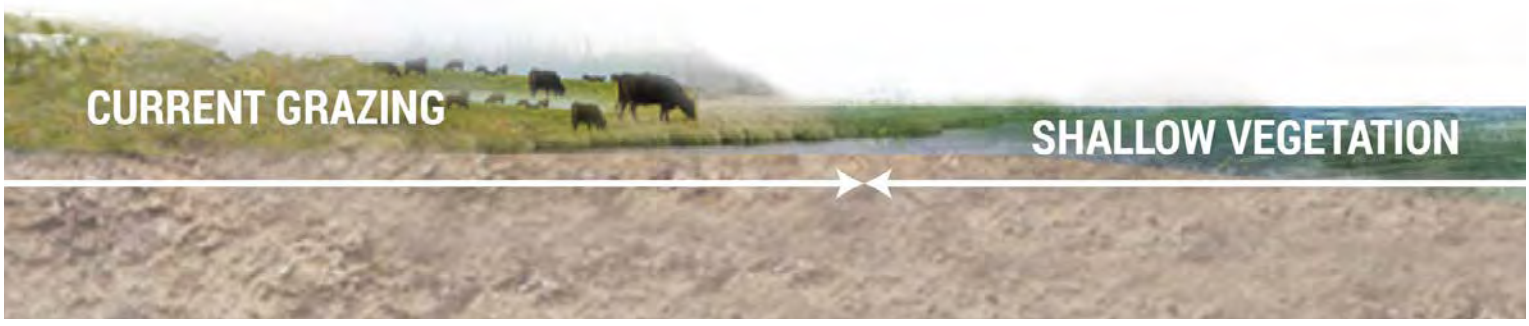
Sediment is mobilized and carried to lakes, rivers, and streams through a variety of mechanisms. Along lakes and reservoirs, boat wave-induced erosion increases sediment in the waterbody, especially during high water periods. Shoreline erosion due to winds has created 5- to 50-foot vertical cliffs in some areas on the east shore of Lake Cascade. Livestock grazing and streambank erosion can cause excessive sediments to be carried into the receiving waters. Sedimentation is also caused by uncontrolled off-road vehicle use and gravel roads with poorly functioning drainage structures.

The metric used to measure the sedimentation potential of a stream is the percentage of the banks that are considered stable. The goal of the National/Idaho Pollutant Discharge Elimination System Stormwater Programs under the CWA is to limit erosion and sediment pollution. Measures to implement this goal should be enforced.

PATHOGEN (COLIFORM) AND NITRATE CONTAMINATION

Coliform bacteria are present in the environment and in animal and human feces. Although coliform bacteria are unlikely to cause illness, their presence is an indicator of the potential presence of harmful pathogens. Human health effects from pathogenic coliform bacteria include nausea, vomiting, diarrhea, acute respiratory illness, meningitis, ulceration of the intestines, and possible death. Since Big Payette Lake is used as a source of drinking water for the City of McCall, pathogen contamination is a real concern.

In addition to coliform bacteria, nitrates are also a concern for drinking water supplies. At concentrations above 10 mg/L in drinking water, nitrates can cause a diminished capacity of the blood to transport oxygen in infants younger than three months, which leads to “blue baby syndrome.” Blue baby syndrome is a condition where a baby’s skin turns blue due to a lack of oxygen.



Both coliform and nitrate contamination can originate from wastewater effluent or runoff over agricultural or forested lands where animals are present. There was a measurable impact on the fecal bacteria detected in streams downstream of recreational housing on the west side of Lake Cascade and an even higher impact downstream of grazed land (Zimmer, 1983). Since nitrate nitrogen (one part nitrogen plus three parts oxygen) is highly mobile and standard septic systems are only able to achieve 10 to 20 percent removal rates (U.S. EPA, 2002), septic leachfields and unpermitted systems located near waterbodies are concerns.

AQUATIC HABITAT HEALTH

The primary environmental hazard to aquatic species is low dissolved oxygen during the winter and summer months, elevated water temperatures in the late summer, and low water levels or streamflow. Juvenile aquatic organisms are more susceptible to the effects of low dissolved oxygen. Reservoir drawdowns and low stream flows limit fish habitat and limit fish access to refuge areas in the tributaries where water is more highly oxygenated and cooler.

Dissolved oxygen concentration above 6 mg/L is optimal for aquatic life. Cold water holds more dissolved oxygen than warm water and increased flow rates provide more aeration and higher dissolved oxygen concentrations. Thus, elevated temperatures and low flows reduce dissolved oxygen and negatively impact aquatic habitat health.

RIPARIAN VEGETATION CONDITIONS

Riparian zones or areas are the interface between land and waterbodies. Riparian vegetation provides a transition between wetland and upland areas. The riparian areas adjacent to the waterbodies provide water quality enhancement, flood control, shoreline stabilization, and very important wildlife habitat. Shading provided by willows and other riparian vegetation enhances aquatic habitat by cooling the water and increasing dissolved oxygen levels and provides protective cover for nesting waterfowl.

Livestock grazing, land development adjacent to waterbodies, and proliferation of access paths can destroy the riparian vegetation, in addition to increasing erosion and sedimentation potential. The riparian vegetation can also be greatly impacted by invasive, non-native plants.

Certain areas of Lake Cascade are very shallow. So much so that the 300-foot buffer may only extend to depths of a few feet. These areas are not boatable when water levels drop in the summer.

WATERWAY EXISTING CONDITIONS HIGHLIGHTS

LAKE CASCADE

Lake Cascade is a relatively shallow man-made reservoir managed by Reclamation. The average depth of the lake is 26 feet at full pool (high pool) and approximately 12 to 14 feet after drawdown in late summer. Designated water use includes contract irrigation, power generation, fish migration, augmentation flow, flood control, recreational use, and drinking water supply.

RECREATION

There are 25 existing recreation sites at Lake Cascade, 19 of which are under Reclamation jurisdiction with Lake Cascade State Park managing much of the recreation infrastructure and programming; the other six sites are under USFS jurisdiction. There are 10 boat launches managed by IDPR or USFS. Recently, there have been discussions of adding new marinas but no official plans have been approved. There are approximately 300 camping sites, including developed sites, group camping sites, private campgrounds, yurts, and dispersed camping spaces. There are numerous private residential docks, especially on the northeast arms. The lake provides important aquatic and terrestrial wildlife habitat and fishing is popular year-round. Some areas surrounding the lake are closed or inaccessible during winter but others provide cross-country skiing, snowshoeing, fat tire biking, ice fishing, and snowmobiling trails.

LAND USE

The 86-mile shoreline of Lake Cascade is a mix of natural forest, agricultural, recreational, and residential land uses. Almost two dozen campgrounds and day use areas, some with boat launches and direct access to the water, are present at Lake Cascade. Development is more concentrated on the east and north sides of the Lake with scattered residential subdivisions along the west side. Most prominent is the Tamarack Resort and the West Mountain subdivision. Grazing land exists to the east, north and south, as well as natural habitat, including forests and wetlands. A private airstrip and golf course round out the variety of land uses. For much of the perimeter of Lake Cascade, roads separate the waterway from development. Much of the West Mountain Road adjacent to the Lake is partially graveled and very dusty. Aside from the urban drainage from McCall and Payette lakes, the watershed of Lake Cascade is primarily forest and agricultural land. Increasingly, the trend is to convert the agricultural land to residential uses, including subdivisions and large rural residential parcels. As an example, Tamarack Resort, on state-leased land, converted forest land to a resort.

Community Input on the Most Highly Rated Waterway Attributes

- Safety
- Parking

Donnelly Chamber of Commerce

Donnelly Chamber of Commerce

ENVIRONMENTAL RESOURCES

Six areas of over 4,000 acres at Lake Cascade are specifically designated as Wildlife Management Areas (WMAs). The overall purpose of WMAs is to protect habitat for migratory birds and sensitive, threatened, or endangered wildlife species. The most crucial, abundant, and sensitive of these habitats are the riparian areas and wetlands. The emergent vegetation, adjacent wet meadows, swales, mudflats, and sandbars are critical as nesting, feeding, and loafing habitat for waterfowl, shorebirds, wading birds, and raptors.

Water quality became a concern in Valley County in the 1970s when noxious algal blooms, aquatic weeds, and fish kills began to occur frequently in Lake Cascade. In the early 1990s, significant blue-green algae blooms caused by low water levels, high phosphorous loading, and hot weather resulted in 23 cattle dying from ingesting the toxic algae in the Lake. In 1995, a public health advisory was issued for Lake Cascade due to massive algal blooms. In 1996, the Lake Cascade Phase I Watershed Management Plan was developed and TMDLs were established for phosphorus for Lake Cascade, North Fork Payette River, and several tributaries.

OWNERSHIP
RECLAMATION

SIZE (ACRES)
28,000

RECREATIONAL CHARACTER
URBAN-RURAL

SURROUNDING LAND USES

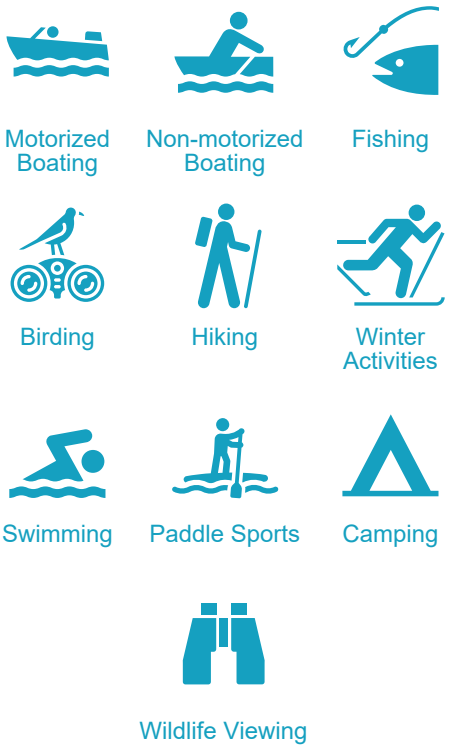
- Rural residential parcels
- Residential subdivisions
- Residential condominium
- City Residential
- Irrigated and dry grazing land
- USFS
- Wetlands
- Conservation areas
- Airstrip
- Campgrounds
- Day use areas
- Boat launches
- Golf Course

ADJACENT OWNERSHIP

- Public
  - Bureau of Reclamation
  - Boise National Forest
  - Idaho Department of Parks and Recreation
  - Valley County
  - City of Cascade
  - City of Donnelly
- Private

Identified sources of phosphorus in Lake Cascade include unimproved roads adjacent to the Lake, unpermitted and substandard septic systems in the West Mountain Area (Lappin, 1989), internal recycling of nutrients within the Lake, and land management practices within the watershed (Lappin, 1989). Point sources of phosphorus include two wastewater treatment plants and the Idaho Department of Fish and Game fish hatchery.

Water quality monitoring by the IDEQ from 1989 through present indicates that there have been improvements to water quality in the Lake and most of the tributary systems, but the TMDL targets have still not been met. Recreation, cold water aquatic life, and agricultural water supply are still designated as impaired. Impaired water quality is apparent in the increased frequency of posted public health advisories including in 2021 for Lake Cascade due to toxic algal blooms. In Lake Cascade, more frequent and in-depth monitoring of cyanobacteria and its causes of proliferation is warranted.



Community Input on the Most Highly Rated Waterway Attributes

- Water Quality
- Cleanliness
- Accommodations/ Services

BIG PAYETTE LAKE

Big Payette Lake is a relatively deep glacial lake often referred to as the "crown jewel" of McCall because of its clear water and nearby forest landscape, making it the area's major attraction. Big Payette Lake is important to McCall residents from a recreational and economic standpoint primarily in the summer months. It also supplies the area's potable drinking water and therefore it is vital to preserve the water quality and shoreline. The primary boating season at Big Payette Lake is early July to Labor Day due to its relatively cold temperatures.

RECREATION

Much of the public land surrounding Big Payette Lake is managed as Ponderosa State Park, which offers over 1,600 acres of natural wilderness on the peninsula in the center of the lake. Ponderosa State Park offers campsites, hiking trails, and habitat for terrestrial and aquatic wildlife. The area's abundant wildlife resources attract nature viewers and photographers throughout the year. Ponderosa State Park includes 14.3 miles of groomed Nordic ski trails ranging in difficulty from recreational to competitive and 3.4 miles of designated snowshoe trails. All of these trails are open for hiking during the rest of the year.

The rest of Big Payette Lake is surrounded by private land, as well as City of McCall parks. McCall's five parks located along Big Payette Lake draw both locals and visitors and are highly used during the peak season. Most visible is Legacy Park, which supports a myriad of shoreline activities such as swimming, non-motorized boating, picnicking, volleyball, and concessions. Many private homes have their own boat docks or other amenities on the water. IDL owns a significant amount of shoreline property in the northern portion of the lake.

IDL: NAVIGATIONAL ENCROACHMENT PERMITS

Boat Garage – 13

Boat Lift – 3

Breakwater – 10

Commercial Marina – 11 (Includes City of McCall and Ponderosa State Park)

Community Dock – 44

Mooring Buoy – 118

Other Navigational – 15 (Mostly Private Boat Ramps)

Single Family Dock – 392

Two Family Dock – 30

City of McCall

LAND USE

Big Payette Lake is used for irrigation, recreation, and is the City of McCall's domestic water supply. For these water-related uses, water quality is critical.

Big Payette Lake is anchored on the south by commercial and residential land uses in the City of McCall and public access to the lake is provided by five parks owned and operated by the City of McCall. Approximately 7 miles (27 percent) of the shoreline is adjacent to Ponderosa State Park, which is located on a peninsula that divides the lake into west and east arms, and at the North Beach on the northern end of the lake where the Payette River flows into the lake. Residential development second home cabins surround much of the remainder of the 26-mile-long shoreline with a scattering of private campgrounds and one resort lodge. USFS and IDL-managed land exists along both sides of the northern perimeter of the lake, continuing north, west, and east within the lake's watershed. Contrasted with much of Lake Cascade, development is immediately adjacent to the lake, with the road access behind developed areas. Access through the North Beach and along the northern half of the eastern side is from gravel roads.

The Big Payette Lake shoreline could be further developed and redeveloped as IDL divests itself of the remaining leased cottage sites and moves toward higher and best uses for some endowment lands. In the agency's draft "Payette Endowment Land Strategy" (IDL 2020), 41 acres of endowment land were identified as transition areas over the next 20 years, including two islands in the lake and land along the east shoreline. The endowment land surrounding Big Payette Lake is a controversial issue at this time related to discussions between development and conservation. Another 3,500 acres of endowment land not identified for transition in the report immediately borders the lake.

Downtown McCall. Chad Case

ENVIRONMENTAL RESOURCES

In 1997, a technical study of Big Payette Lake was conducted to evaluate its capacity to assimilate nutrient inputs and its potential for eutrophication. Based on measurements of total phosphorus, nitrogen, and chlorophyll-*a* taken in 1995 and 1996, the lake was found to be oligotrophic (low productivity) because blue-green algae was found to be rare and total phosphorus was consistently low. However, the bottom of the lake had low dissolved oxygen concentrations due to the colder water at the bottom not mixing with the upper layers. Accumulating organic matter in the lake bed sediments also caused an internal load of nutrients. These factors, combined with increases in residential development and recreational use, cause concern for potential future eutrophication of Big Payette Lake and a reduction in its water quality.

Coliform contamination and volatile and synthetic organic chemical contamination from fueling sources near the water supply intakes is a concern. In the summer of 2000, the surface water intake at the Shore Lodge encountered high levels of bacteria above the safe drinking water limits.

OWNERSHIP
IDAHO DEPT. OF LANDS

RECREATIONAL CHARACTER
URBAN

SIZE (ACRES)
5,330

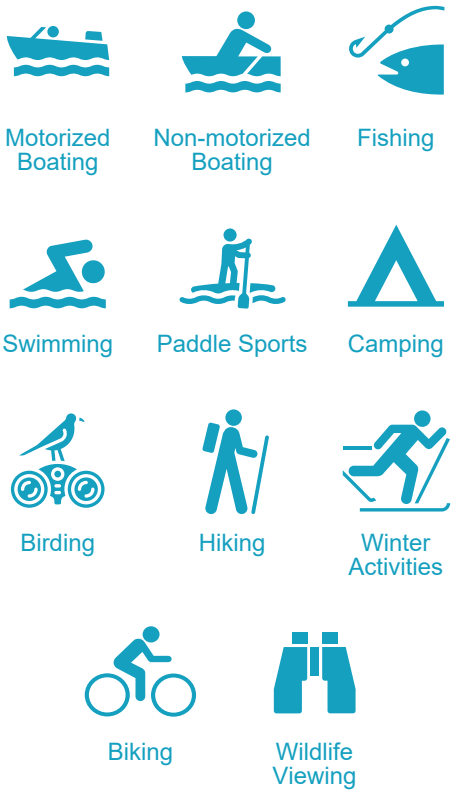
SURRROUNDING LAND USES

- City commercial (lodging, retail, restaurants, recreation services)
- City residential
- Rural residential subdivisions
- Rural residential parcels
- Residential condominiums
- USFS land
- Wetlands
- Campgrounds
- Day use areas
- Boat launches

ADJACENT OWNERSHIP

- Public
  - Idaho Department of Lands
  - Idaho Department of Parks and Recreation
  - University of Idaho
  - Valley County
  - City of McCall
- Private

The Big Payette Lake Management Plan was completed in 1997. It included a management plan, an implementation plan, a monitoring and trend analysis, and an extensive list of recommended BMPs (Big Payette Lake Water Quality Council, 1997). From 1997 to 2020, the IDEQ has performed monitoring of dissolved oxygen, total phosphorus, total nitrogen, and chlorophyll-a in Big Payette Lake (Cusack, 2020). The summary report was completed in 2020 and found that total phosphorus had remained relatively consistent but had increased in 2020 and should be closely monitored. Total nitrogen was found to have decreased since 2005. Two of the four water quality objectives included in the Big Payette Lake Management Plan were not met for three consecutive years. This included the objective related to dissolved oxygen concentrations from June to September and the median value of total phosphorus measured from May to September. Measurements and impacts of hydrocarbons in Big Payette Lake should be evaluated. Eurasian water milfoil has been establishing in Big Payette Lake, causing impacts to aquatic habitat by consuming oxygen and blocking sunlight. The Valley County Weed Department is actively working to remove milfoil from Payette and Warm lakes.




Logan Simpson

Community Input on the Most Highly Rated Waterway Attributes

- Water Quality
- Safety
- Aquatic Vegetation/ Habitat

WARM LAKE

Warm Lake is the largest natural lake in the Boise National Forest and it is geothermal. There are many natural hot springs in the area.

RECREATION

Motorized and non-motorized boating are popular activities. There is a small beach area for swimming. Fishing, hiking, birding, and wildlife viewing are also popular activities. Along with USFS campgrounds, two lodges manage recreation along the north side of the lake through USFS leases.

LAND USE

The perimeter of the 1.6-mile-long Warm Lake shoreline includes two lodges, three campgrounds, a swimming beach, and three residential cabin neighborhoods on USFS-leased land. The Northshore Lodge manages 10 cabins and a restaurant/store. Warm Lake Lodge hosts seven cabins and seven camping sites. A small neighborhood of cabins borders the western edge of the lake. The campgrounds include Picnic Point with eight sites, Shoreline with 31 sites, and Warm Lake with 12 sites.

OWNERSHIP
USFS

RECREATIONAL CHARACTER
SEMI-RURAL

SIZE (ACRES)
423

SURROUNDING LAND USES

- Two historic lodges with restaurants, lodges and store
- Residential cabins on leaseholds in three neighborhoods.
- Campgrounds
- Swimming beach
- Boat launches

ADJACENT OWNERSHIP

- USFS - Boise National Forest

ENVIRONMENTAL RESOURCES

There has been no cause for concern to monitor water quality at Warm Lake, therefore minimal information exists. Potential impacts of current concern include increased use of recreational visitors, including wake boats, camping, and social trails, as well as nearby impacts from adjacent roads and future mining operations.


Non-motorized Boating


Swimming


Fishing


Birding


Hiking


Paddle Sports


Hot Springs


Wildlife Viewing


Motorized Boating


Camping

Hidden Lakes. Jon Conti

ALPINE LAKES

There are nearly 300 alpine lakes within Valley County, most of which are only accessible via non-motorized means.

RECREATION

Alpine lakes offer extraordinary backcountry experiences including camping, scenic viewing, and fishing (some lakes stocked with trout and other species by IDFG).

LAND USE

Other land uses within the watershed of Valley County waterways include timber harvesting, unpaved access roads, dispersed recreational use, grazing, communication facilities, and limited mining.

ENVIRONMENTAL RESOURCES

There has been no cause for concern to monitor water quality at the alpine lakes, therefore, minimal information exists.

Fishing

Camping

Hiking

Wildlife Viewing

OWNERSHIP
USFS (TYPICAL)
SIZE (ACRES)
VARIES

RECREATIONAL CHARACTER
PRIMITIVE

SURROUNDING LAND USES
- Forest lands
- Backcountry recreation

ADJACENT OWNERSHIP
- Public

NORTH FORK OF THE PAYETTE RIVER

The North Fork Payette River flows approximately 113 miles south from the Salmon River Mountains to join the Payette River, which is a tributary of the Snake River. The river is popular for kayaking, whitewater rafting, fishing, birding, and wildlife viewing. A section of the river is 16 miles north of Banks is considered big-water Class V for whitewater kayaking. It has served as the site of the North Fork Championship – one of the most challenging whitewater competitions in the world. County Ordinance #20-11 defines non-motorized stretches of the river north of Lake Cascade and Payette Lake.

RECREATION

Just upstream and downstream of Big Payette Lake are popular fishing and paddling sections of the river. The Meanders north of the Lake is a scenic flat water stretch through towering trees, where abundant wildlife can be spotted. Paddle sports are growing in the area. The Meanders can be accessed from multiple locations along the adjacent road causing resource issues with social trails and litter. Just south of the Lake through the City of McCall, the river can also be accessed for fishing and floating. It also can attract whitewater paddlers when the water level is right. However, access point aren't formulized and there are some issues with private property.

The BLM manages a recreation site on the North Fork Payette River, approximately 11 miles south of McCall. The site offers a small sandy beach, swimming, fishing, picnicking, and other sorts of non-motorized river activities. The surrounding forest offers birding and wildlife viewing.

Kelly's Whitewater Park (KWP) opened in June 2010. It includes a short stretch of the North Fork Payette that flows through the 3.4 acres of public park downstream of Lake Cascade. KWP offers rafting, kayaking, paddle boarding, and tubing opportunities. It also links to a five-mile walking path along the bank of the river. The mission of the non-profit park is "to provide local children with an opportunity to learn water sports and water safety while instilling an appreciation for the river."

A popular family-friendly whitewater trip with Class II and III rapids, that is also commercially rafted, is from the Cabarton Bridge down to Smith's Ferry. The put-in location is managed by Valley County and is very busy on summer weekends, to the point of creating safety and natural resource concerns.

LAND USE

The land uses surrounding the North Fork of the Payette River between Lake Cascade and Big Payette Lake are predominately rural, characterized

John Webster for Tamarack Resort

OWNERSHIP
N/A

SIZE
113 MILES

RECREATIONAL CHARACTER
SEMI-PRIMITIVE NON-MOTORIZED (ABOVE LAKE CASCADE); SEMI-PRIMITIVE MOTORIZED (BELOW LAKE CASCADE)

SURROUNDING LAND USES

- Rural residential parcels
- Rural residential subdivisions
- Residential condominiums
- Commercial
- Dry and irrigated grazing
- Irrigated crop lands
- USFS land
- Wastewater treatment plant
- Day use/river access points
- Private common areas
- Private campgrounds
- Fish Hatchery
- Trails

ADJACENT OWNERSHIP

- Public
  - Valley County
  - City of McCall
- Private

by grazing/crop land and residential development on large lots with more dense development within and near the cities. A fish hatchery and two sewage treatment facilities also exist along the river, including the McCall Wastewater Treatment Plant and the West Mountain Sewer and Water Plant.

ENVIRONMENTAL RESOURCES

The North Fork of the Payette River is susceptible to erosion and sedimentation and has been identified with sediment impairment below Lake Cascade. An IDEQ assessment of the river between Big Payette Lake and Lake Cascade indicates that elevated temperature is a potential impairment to cold water aquatic life and salmon spawning; however, nutrients are not in excess and dissolved oxygen and sedimentation is not impairments in this stretch of the river. Currently, the Payette Lake Recreational Water & Sewer District inter-sewage effluent storage pond leaks into an underdrain that discharges into the North Fork of the Payette River.


Kayaking


Fishing


Whitewater Rafting


Camping


Birding


Wildlife Viewing

City of McCall

CHAPTER 3: THE PLAN

INTRODUCTION

The County-wide desired future condition guides the general management for the County-wide system of waterways, by building off public and partner interviews, the existing conditions summary, and case study review. Additional details are provided for each major waterway. Management maps help illustrate the community's vision to manage the land resources in such a way that protects water quality, reduces environmental impacts, and enhances the waterways. Priority strategies direct future management for each waterway, including process, policy, operational, and infrastructure opportunities.

> *The lake is large enough to accommodate everyone. It comes down to better education. People want to do the right thing but need to know the rules.*
>
> *- Waterway User*

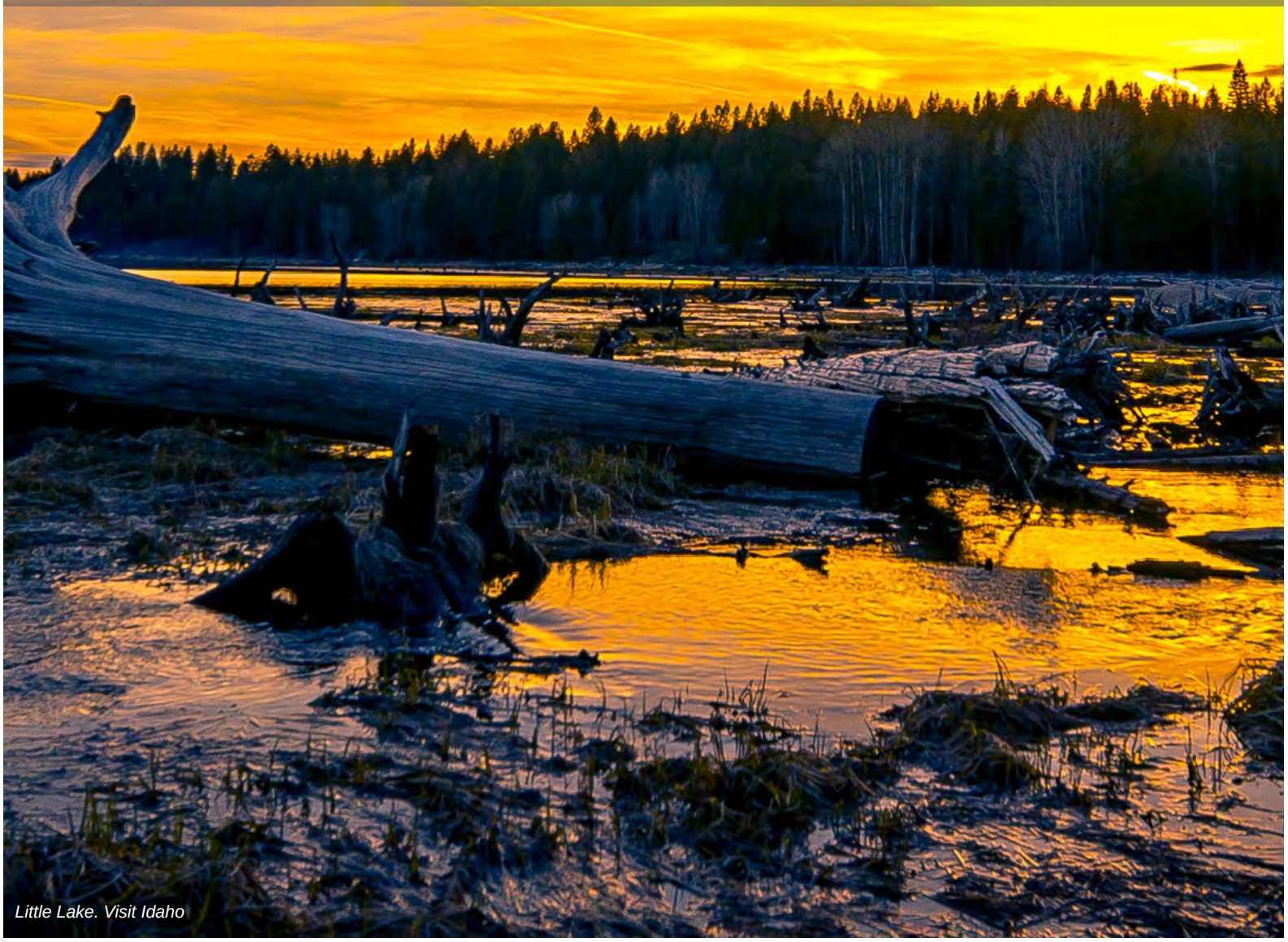
COUNTY-WIDE VISION

The following desired future condition and priority strategies sets the guiding vision for all waterways across the County.

COUNTY-WIDE DESIRED FUTURE CONDITION:

A waterways system that balances and enhances recreation experiences, adjacent land uses, and environmental resources by:

- Optimizing each waterway for its desired recreation experience and protection of its natural resources;
- Protecting high water quality for all including end users, recreators, and aquatic ecosystems;
- Continuing positive visitor satisfaction and supporting a sustainable tourism industry;
- Ensuring complementary and integrated adjacent land uses that support waterways; and
- Providing an understandable and thoughtful path forward for our community and visitors.



Little Lake. Visit Idaho

COUNTY-WIDE OBJECTIVES:

Objectives that apply County-wide include:

CW 1. Maintaining and enhancing amenities to ensure the provision of a high-quality recreation experience and higher quality facilities.

CW 2. Ensuring public safety of water-based recreationalists, including both motorized and non-motorized boating.

CW 3. Conserving and promoting ecological processes, including maintaining healthy wildlife populations, fisheries, and native aquatic plant communities.

CW 4. Maintaining strong partnerships with the County, Reclamation, IDPR, IDL, USFS, IDFG, IDEQ, Valley County Weed District, VSWCD, NRCS (Natural Resources Conservation Service), North Fork Payette Watershed Coalition, local municipalities, and landowners, among others.

CW 5. Managing upland uses within watersheds to protect water quality, including development, recreational access, weed control, forest management, farming, and grazing.

CW 6. Implementing actions from the Valley County Groundwater Quality Improvement and Drinking Water Source Protection Plan (2022) and the Implementation Plan for the Cascade Reservoir Phase II Watershed Management Plan (2000).

CW 7. Creating a desired future condition to support annually monitoring and reporting keystone indicator data to a consolidated database.

Definitions for Waterway- Specific Visions

The visions for each specific waterway is made up of four parts:

- Desired Future Condition: Statement of purpose that describes the ultimate management scenario.
- Priority Strategies: Initiatives, guidance, and management recommendations that are needed to maintain the desired future condition.
- Management Map: A geographic illustration of priority strategies.
- Keystone Indicators: The primary metrics that will be used to track progress to achieve the desired future condition. Additional details of implementation of the indicators will be identified in the Adaptive Management Plan.

WATERWAY SPECIFIC VISION & STRATEGIES

LAKE CASCADE VISION

Desired Future Condition

Lake Cascade enhances water quality while fostering an emerging outdoor recreation industry.

PRIORITY STRATEGIES

LC 1. Encouraging appropriate use to prevent user conflicts and support the environment.

LC 1a. Establish new safety zones around areas identified as High Impact Caution Areas to include reducing speeds and establishing directional travel.

LC 1b. Establish no wake management areas where water depth is 10 feet or less and maintain the current 300 foot shoreline buffer per County Ordinance.

- Publishing materials on water fluctuations and maps of high and low pool and educate the public on the Lake's purpose.
- Publishing maps and data via mapping applications GAIA, onX, Avenza (georeferenced PDFs), and/or Navionics and educate users before they get on the water.

LC 1c. Educate the public about Idaho State Statutes Operation of Vessel Section 67-7077 considering no wake rules that apply within 100 feet of a dock, person, or structure.

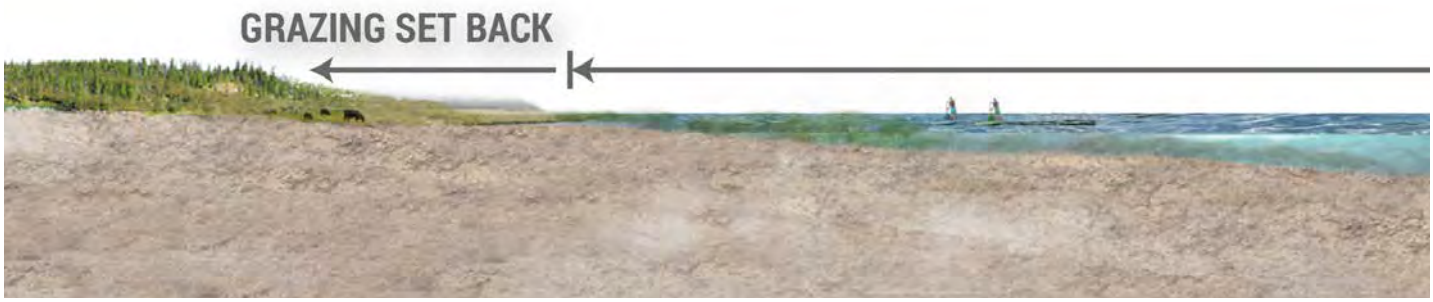
LC 1d. Maintain level of boater safety enforcement and marine sheriff patrols. Publish Wakeboat Etiquette Tips; start a Ride the Core, Avoid the Shore program. Determine sources for more patrol funding.

LC 1e. Incorporate a public involvement process to cite new marinas to minimize changes to the natural landscape, provide for safe navigation, and meet indicators for carrying capacity.

LC 1f. Work with State agencies to assess the need and implementation opportunities for aquatic invasive species checks at specific boat ramp locations.

Community Input on Waterway Concerns

- Recreation
  - Boat waves
  - Carrying capacity
- Environmental Resources
  - Phosphorus and toxic algae blooms
  - Nitrogen and other nutrients
  - Dust particulates
- Land Use
  - Rangeland/grazing management
  - Increasing residential development impacts
  - Post-wildfire impacts




Logan Simpson

LC 2. Creating complementary land uses that contribute to water quality health to reduce occurrences of public health advisories due to harmful algal blooms.

- LC 2a. Work with irrigation districts, IDFG, and Idaho Power to assess locations of water diversions and possible changes to maintain higher flows and colder water temperatures.
- LC 2b. Work with NRCS and private landowners to implement grazing management plans to exclude livestock near streams and waterway shorelines, alternate water sources, and other conservation practices.
- LC 2c. Strengthen conservation practices from the impacts of grazing and return flood irrigation flows.
- LC 2d. Support EPA's recommendation to complete septic tank inspections every 3-5 years to determine if pumping and/or repairs are needed. Complete inspections upon sale of a property and provide ways to incentivize septic owners to maintain their systems.
- LC 2e. Support a South Lake Recreation Water and Sewer District centralized sewer collection and treatment system.
- LC 2f. Enhance education on the purpose and operations of Lake Cascade as a reservoir and the role of water uses downstream.
- LC 2g. Work with Valley County and partners to implement strategies and practices from the Valley County Ground Water Quality Improvement and Drinking Water Source Protection Plan.

LC 3. Keeping our shorelines free from runoff pollution.

LC 3a. Implement improvements to existing zoning provisions, such as the requirement for an impact report to apply to properties around the lake and/or adopt an overlay zone adjacent to the Lake and its tributaries to implement BMPs (natural vegetative swales, prohibition excessive clearing, limiting fertilizers and water use by reducing areas of sod and identifying preferred plant species, on-site water retention, grassy swales without fertilizer, etc.). Review minimum lot requirements adjacent to waterways.

LC 3b. Stabilize stream banks with bioengineering techniques without riprap, where possible.

LC 3c. Work with the USFS and other adjacent landowners to identify solutions to and improve sustainability of roads and trails to decrease erosion and improve drainage, while maintaining access.

LC 3d. Support BMP measures outlined in the Implementation Plan for the Cascade Reserovir Phase II Watershed Management Plan (IDEQ 2000).

LC 3e. Work with the USFS and IDL on forest management within the wildland urban interface to protect water quality.

LAKE CASCADE KEYSTONE INDICATORS		
Indicator	***Baseline #***	***Desired Future Condition***
User Satisfaction	75% surveyed rate overall experience as excellent	Maintain greater than 75% feeling of excellent experience
Incidents	113 warnings issued per year (across Valley County)	Maintain less than <100 warnings per year (across Valley County)
Feeling of extreme crowdedness	10% surveyed	<20% surveyed
Health Advisories Issued [1]	1 issued in 2022, 2021, 2020, 2019	No health advisories
Total Phosphorus	0.03-0.06 mg/L [1, 2, 3]	<0.025 mg/L [4]
Water Clarity (Secchi disk readings)	0 - 20.5 ft	> 6 ft
Dissolved Oxygen	<6 mg/L [4]	>6 mg/L [5]
Water Temperature	75°F max [4]	<22°C (71.6°F) max, <19°C (66°F) avg [5]
Carrying Capacity (Boats at one time)	161 (High)	368 (at 40 acres per boat)

[1] 2019 Monitoring Report for Cascade Reservoir and the North Fork Payette River (HUC 17050123) between Payette Lake and Cascade Reservoir

[2] IDEQ 2021 Lake Cascade Water Sampling results (Excel format)

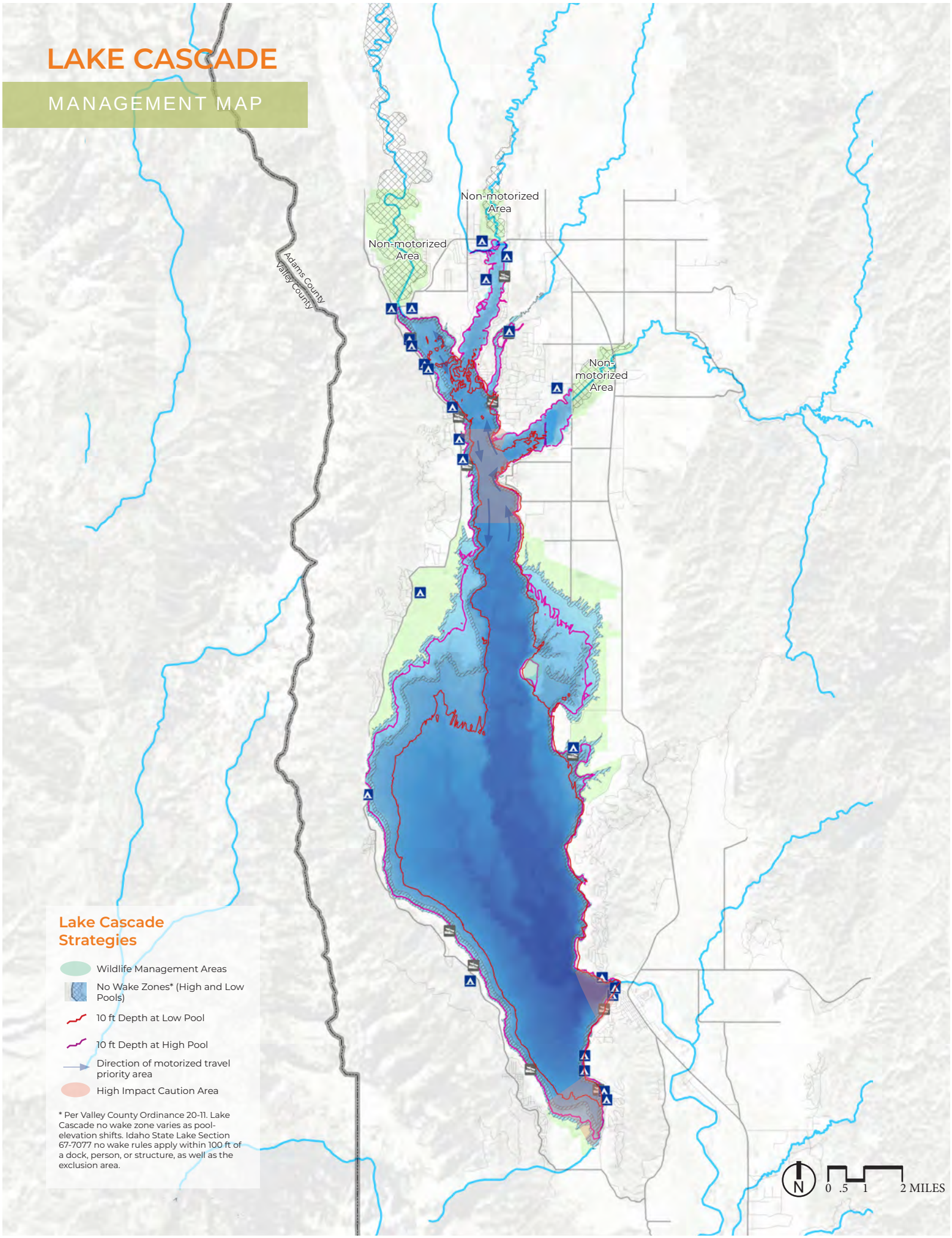
[3] IDEQ 2021 North Fork Payette Update, NF Payette Monitoring Cascade Reservoir Monitoring Cyanobacteria and Big Payette Lake Monitoring for NFPR Watershed Summit presentation

[4] "Cascade Reservoir Watershed: Phase III Water Quality Management Plan and TMDL Five-Year Review" https://www2.deq.idaho.gov/admin/LEIA/api/document/download/11976

[5] "Water Body Assessment Guidance 3rd Edition" https://www2.deq.idaho.gov/admin/LEIA/api/document/download/14844. Per the DEQ 1998 Phase II WMP - "dissolved oxygen in lakes and reservoirs (>6 mg/L at all times, except for the bottom 20% of water depth in lakes and reservoirs where depths are thirty-five (35) meters or less, and hypolimnion waters in stratified lakes and reservoirs)"

LAKE CASCADE

MANAGEMENT MAP



BIG PAYETTE LAKE VISION

Desired Future Condition

Big Payette Lake is a significant recreational summer destination for Valley County tourism and a variety of activities while continuing to protect our headwaters.

PRIORITY STRATEGIES

BP 1. Preventing user conflicts and protecting our headwaters ecosystem.

BP 1a. Implement a targeted expansion of no wake management areas and install buoys, as appropriate (potentially with cameras), to denote changes in use and management based on the following criteria:

- Shallow water 10 feet or less in depth
- Environmental/Wildlife areas extended to 500 feet
- River inlets extended to 500 feet
- High-traffic areas/marinas extended to 500 feet
- Urban shoreline/docks/houses to extended 500 feet (south of narrows and pilgrim cove)

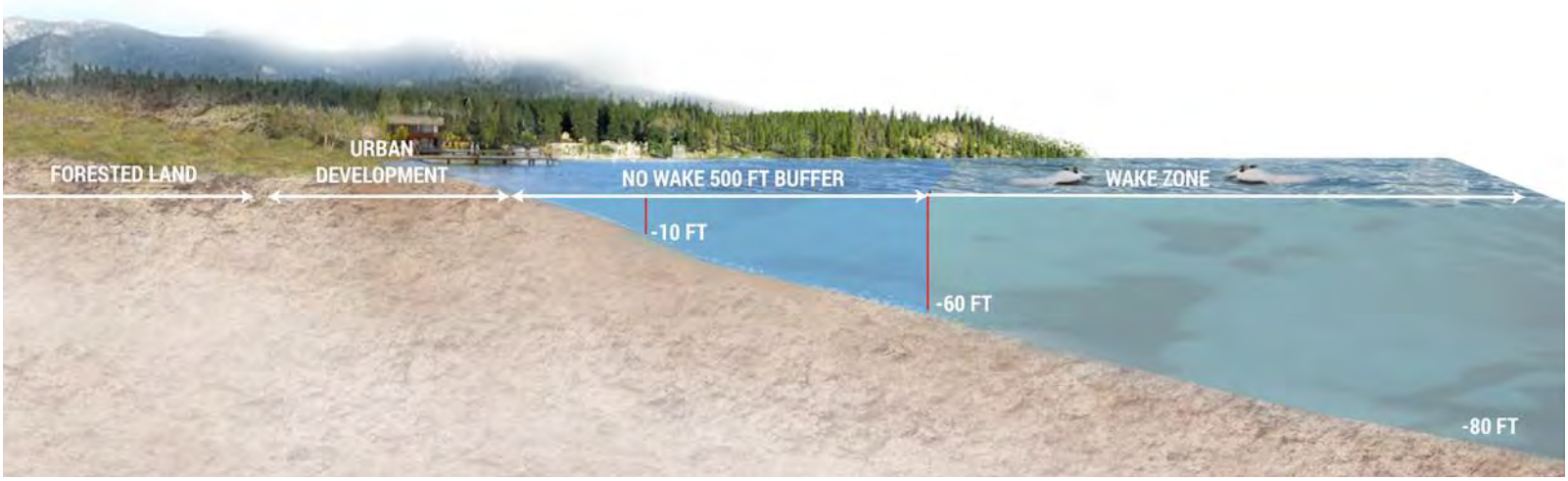
BP 1b. Provide robust user education through signage, mapping, interactive applications, rental company education, and social media/newsletter messaging.

- Create a map and brochure to send out with rental companies, concessionaires, and recreation agencies to share consistent standards (develop signage plan) regarding life jackets, whistles, and invasive species stickers.
- Publish Wakeboat Etiquette Tips and start a Ride the Core, Avoid the Shore program.

BP 1c. Educate the public about Idaho State Statutes Operation of Vessel Section 67-7077 considering no wake rules that apply within 100 feet of a dock, person, or structure, along with speed limits.

Community Input on Waterway Concerns

- Recreation
  - Boat waves
  - Carrying capacity
  - Enforcement/education
- Environmental Resources
  - Erosion
  - Invasive aquatic species
  - Drinking water source
- Land Use
  - Residential impacts
  - Urban runoff
  - Infrastructure damage



Payette North Beach. Logan Simpson

SPOTLIGHT ON: MANAGEMENT AREA CASE STUDIES

Indicators of reduced water quality, increased shoreline erosion, and dissatisfaction of public input show that the current County ordinance of 300 feet (as defined) should not be decreased. Demand for recreation, including more non-motorized vessels, is growing without dedicated space to safely recreate. To maintain safety and water quality, no wake management areas should be expanded. Targeted expansion in shallow waters, urban shoreline, and high impact areas are often where facilities (e.g., docks and marinas) are already located and require low speeds. Carrying capacity for all recreation users to safely enjoy the lake can still be maintained.

Technical summary of scientific data completed by Kootenai County established that wave action is tied to erosion potential, no wake zones of more than 500 feet are recommended, and boats operating at transition speeds generate the most damaging wake. Lake Tahoe has implemented a 600-foot no wake zone to minimize shoreline erosion, reduce impacts to gamefish spawning areas, improve light sources essential to submerged vegetation, and minimize noise impacts on visitors, residents, and wildlife.

This Plan recommends a targeted expanded no wake management area to protect the safety of all users and to reduce impacts to the shoreline.

BP 2. Managing Big Payette Lake's natural setting area and high water-quality standard for drinking water.

- BP 2a. Designate parking and develop additional facilities (e.g., restrooms, kiosks, trash cans) to protect water quality in the headwaters and sensitive natural areas.
- BP 2b. Work with IDPR and IDL on recreation management at the north end of the lake, in tandem with river management (see following section on North Fork of Payette River).
- BP 2c. Work with Idaho Department of Water Resources (IDWR) and the Lake Reservoir Company to monitor and manage residential water intakes and dam releases to maintain water quality and temperature for the health of the lake and river.
- BP 2d. Maintain an updated Water Master Plan and work with Valley County and partners to implement strategies and practices from the Valley County Ground Water Quality Improvement and Drinking Water Source Protection Plan.
- BP 2e. Work with State agencies to assess the need and implementation opportunities for aquatic invasive species checks at specific boat ramp locations.

BP 3. Encouraging appropriate multiple use and keeping our waterways safe.

- BP 3a. Sign "Paddle Sport/Swim Priority Areas" to educate users about high use non-motorized areas where additional precautions should be met.
- BP 3b. Develop concessionaire program to further define desired uses and capacity.
- BP 3c. Maintain presence of law enforcement at docks and high-use areas during peak times with additional funding, volunteer rangers, and patrol hours.
- BP 3d. Work with the City to assess launch fees and allocate funds for user safety education and future enforcement.
- BP 3e. Identify new points of access to reduce social trails on public lands.

BP 4. Reducing impacts from land uses to preserve and protect the watershed and natural corridors that connect to the lake.

BP 4a. Continue to monitor, review, and amend current land use regulations including the McCall Area Shoreline and River Environs Overlay Zone.

BP 4b. Continue to follow IDEQ guidance, adopt best practices, and monitor impacts from urban stormwater management and remaining septic systems adjacent to the lake.

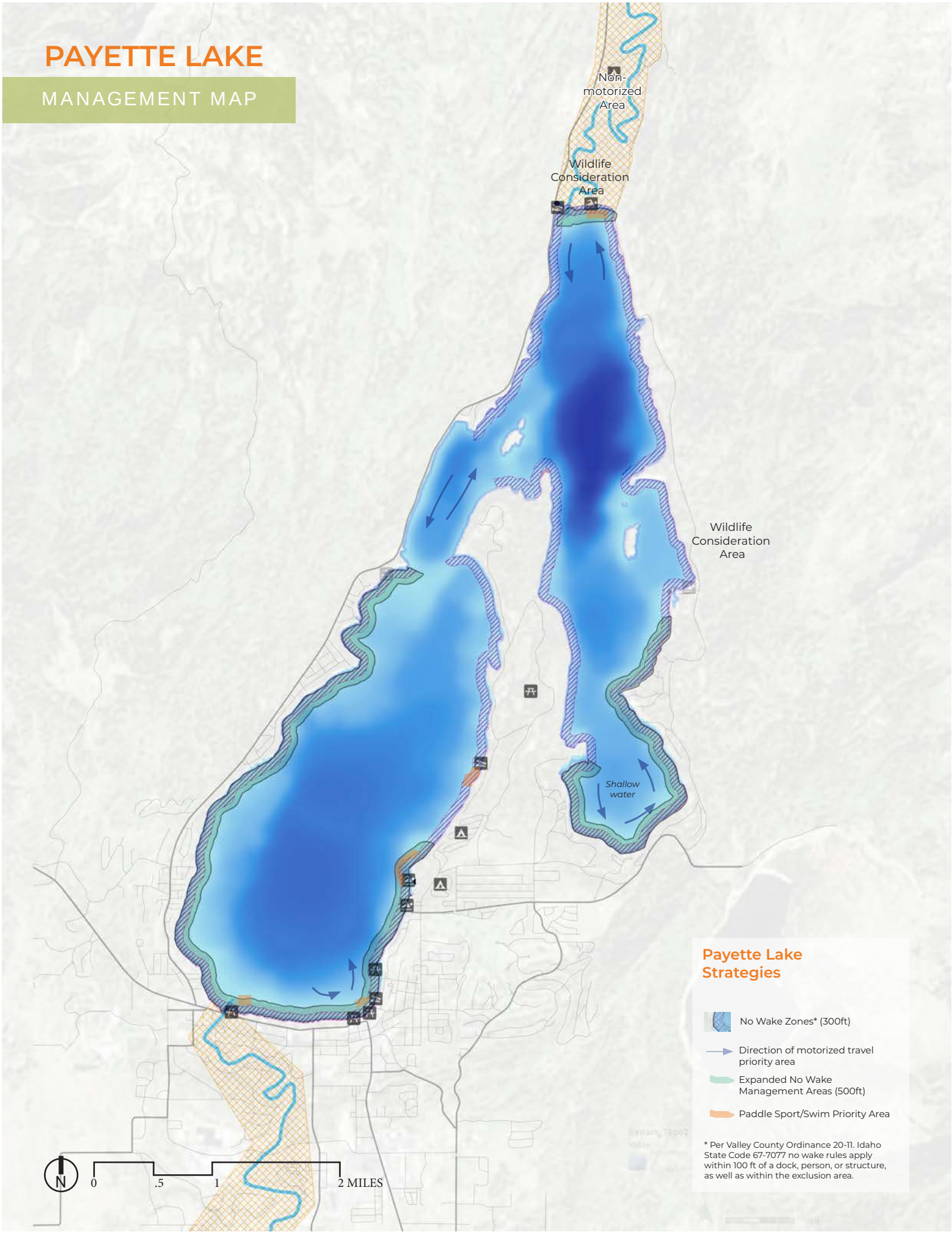
BP 4c. Work with the USFS and IDL on forest management within the wildland urban interface to protect water quality.

BP 4d. Working with the various City departments, review code enforcement related to municipal water use and supply and adjacent land uses.

BP 4e. Complete wildlife/environmental analysis of islands to asses critical resources.

PAYETTE LAKE

MANAGEMENT MAP



Payette Lake Strategies

- No Wake Zones* (300ft)
- Direction of motorized travel priority area
- Expanded No Wake Management Areas (500ft)
- Paddle Sport/Swim Priority Area

* Per Valley County Ordinance 20-11. Idaho State Code 67-7077 no wake rules apply within 100 ft of a dock, person, or structure, as well as within the exclusion area.

BIG PAYETTE LAKE KEYSTONE INDICATORS		
Indicator	***Baseline #***	***Desired Future Condition***
User Satisfaction	84% surveyed rate overall experience as excellent	Maintain greater than 75% feeling of excellent experience
Incidents	113 warnings issued per year (across Valley County)	Maintain less than <100 warnings per year (across Valley County)
Feeling of crowdedness	13% surveyed stated feeling extremely crowded	Maintain less than 30% feeling of extreme crowdedness
Dissolved Oxygen	>6 mg/L [1]	>6 mg/L (above 200 foot depth)
Total Phosphorus	.0047 - .0062 mg/L [2]	<0.006 mg/L[3]
Carrying Capacity	76 (High)	102 (at 40 acres per boat)
Acres of no wake	771	1,003 (based on expanding the no wake distances in targeted areas)
Length of shoreline in conserved public lands and available for public access	7 miles (27%)	Increase to greater than 35%

[1] "Cascade Reservoir Watershed: Phase III Water Quality Management Plan and TMDL Five-Year Review" https://www2.deq.idaho.gov/admin/LEIA/api/document/download/11976

[2] Eutrophication potential of Payette Lake, Idaho https://pubs.er.usgs.gov/publication/wri974145

[3} Big Payette Lake Management Plan and Implementation, Big Payette Lake Water Quality Council , 1997


Logan Simpson

WARM LAKE VISION

Desired Future Condition

Warm Lake provides a minimally developed recreation experience in a natural forested environment.

PRIORITY STRATEGIES

WL 1. Keeping a productive ecosystem to protect water quality, riparian areas, and nesting birds.

WL 1a. Implement and enforce targeted no wake zones in all areas with macrophyte vegetation areas (i.e., at 10 feet depth and within .025 mile of nesting bird areas).

WL 1b. Implement no wake zones 300 feet from the shoreline and maintain no wake hours before 11 AM and after 6 PM.

WL 1c. Implement and maintain no wake buoys to delineate no wake zones.

WL 1d. Implement and enforce directional travel for motorized vessels.

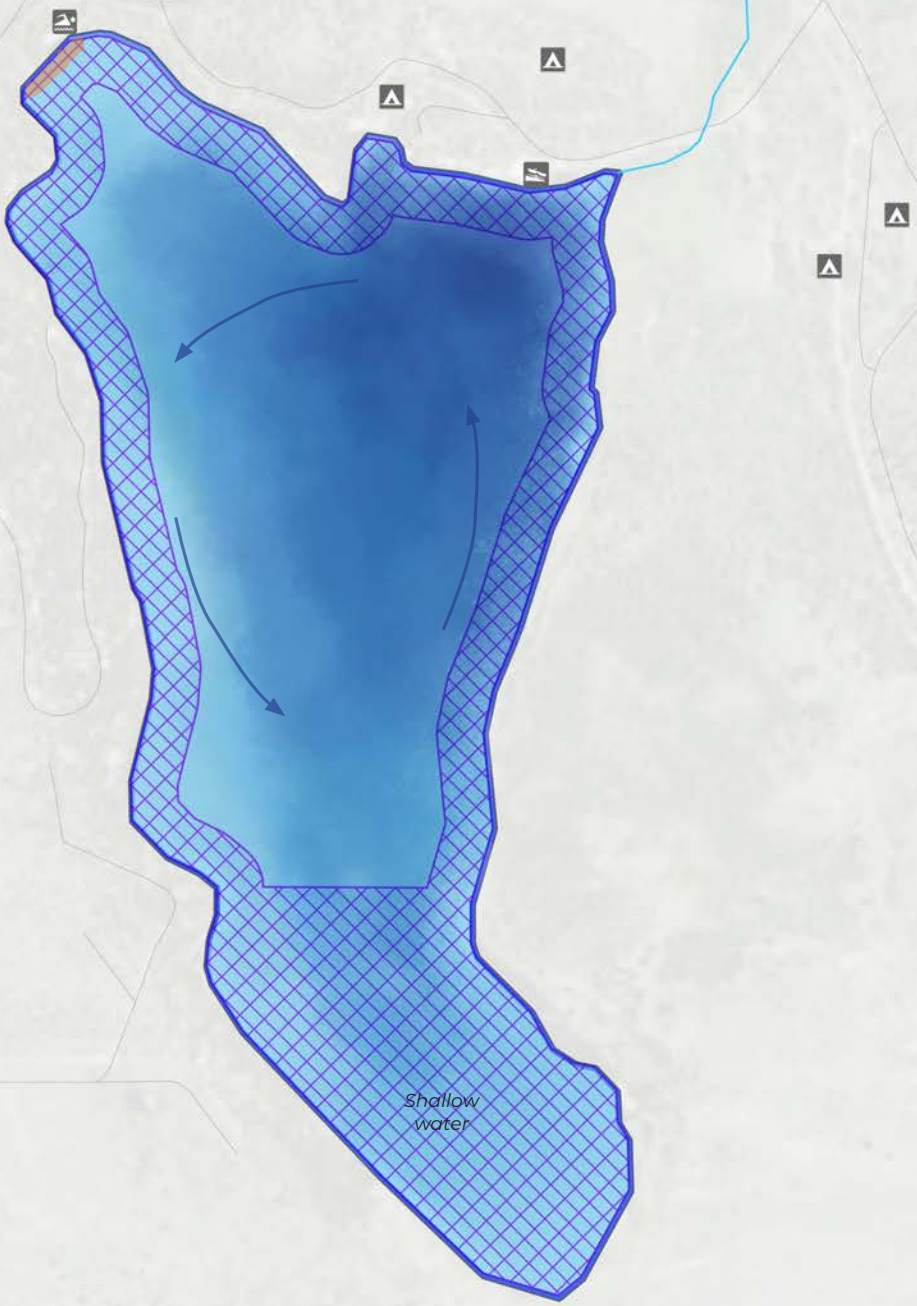
WL 1e. Provide robust user education through signage, mapping, interactive applications, and social media/newsletter messaging on unique management of Warm Lake.

Community Input on Waterway Concerns

- Recreation
  - Recreation growth
  - Carrying capacity
- Environmental Resources
  - Invasive aquatic species
  - Erosion
- Land Use
  - Forest management
  - Rural road management

WARM LAKE

MANAGEMENT MAP



Warm Lake Strategies

- No Wake Zones* (300ft and vegetation area)
- Direction of motorized travel priority area
- Paddle Sport/Swim Area

No wake rules apply:

- within 100 ft of a dock, person, or structure (Idaho State Lake Section 67-7077)
- within 100 feet of anchored vessel, swim float, marked swimming area, person in water, person in a vessel engaged in fishing or any manually propelled vessel (Valley County Ordinance 20-11)
- between 6pm and 11am (Valley County Ordinance 20-11)

N

0 .13 .25 .5 MILES

WL 1f. Identify baseline water-quality values for indicators such as dissolved oxygen, total phosphorous, water clarity, and water temperature.

WL 1g. Create a friends group and work with Warm Lake Recreation & Sewer and IDEQ to implement a water quality program.

WL 1h. Work with the USFS to assess launch fees and allocate funds to user safety education and future enforcement.

WL 2. Minimizing adjacent land-use impacts.

WL 2a. Construct new vault toilets and ensure septic and waste management are working efficient (working with the USFS, concessionaires, and Warm Lake Associations of Cabin Owners).

WL 2b. Define a Shoreline Trail between North Shore Lodge and Billy Rice Public Beach and complete repairs to trails around lake to reduce erosion.

WL 2c. Prohibit camping anywhere along the shoreline of Warm Lake.

WARM LAKE KEYSTONE INDICATORS		
Indicator	***Baseline #***	***Desired Future Condition***
Carrying Capacity (Boats at one time)	52 (High)	64 (at 10 acres per boat)
Nitrogen	Future Testing Required	0.006 mg/L
Temperature	Future Testing Required	<22°C max, <19°C avg [1]

[1] "Water Body Assessment Guidance 3rd Edition" https://www2.deq.idaho.gov/admin/LEIA/api/document/download/14844


Chad Case

NORTH FORK OF PAYETTE RIVER & TRIBUTARIES (ABOVE PAYETTE LAKE, BELOW PAYETTE, BELOW CASCADE) VISION

Desired Future Condition

Providing different degrees of non-motorized use that responds to the natural environment.

PRIORITY STRATEGIES

NF 1. Maintain high-quality user experiences and natural resources across all river segments.

NF 1a. Educate users on low-impact river recreation management (e.g., pack it in and out, leave no trace practices).

NF 1b. Complete specific river management plan for each river segment to maintain water quality and define appropriate recreation access points.

NF 1c. Work with land management agencies to clean up dispersed camping and work toward developing a designated dispersed camping system and/or more formalized campgrounds with amenities.

NF 1d. Continue to survey river uses for feeling of crowdedness and user satisfaction.

NF 1e. Stabilize stream banks with bioengineering techniques without riprap, where possible.

Community Input on Waterway Concerns

- Recreation
  - Recreation growth
  - Carrying capacity
- Environmental Resources
  - Invasive aquatic species
  - Erosion
  - Loss of connectivity and stream function
- Land Use
  - Forest management
  - Rural road management

McCall Area Chamber

NF 1f. Implement improvements to existing zoning provisions integrating BMPs (natural vegetative swales, prohibition excessive clearing, limiting fertilizers and water use by reducing areas of sod and identifying preferred plant species, on-site water retention, grassy swales without fertilizer, etc.) and review minimum lot requirements adjacent to rivers and streams.

NF 1g. Work with landowners, developers, irrigators, land management agencies, and local working groups to identify and prioritize projects that restore stream connectivity and function, reduce nutrient loading, and improve temperature and flow conditions.

NF 1h. Work with Central District Health to ensure septic systems are maintained and are not built adjacent to waterways.

NF 2. Work with IDPR and IDL to minimize natural resource impacts above Payette Lake by creating site-specific designs and an implementation plan.

NF 2a. Define parking and access points along the river. Work to establish adequate, formalized user access trails and restore social trails that are no longer needed.

NF 2b. Evaluate the need for parking permit and/or designated camping system. Limit parking to designated locations only.

NF 2c. Provide vault toilets, refuse disposal, and signage for boaters at popular put-in locations, such as at North Beach (second needed), River's Bend, Fisherman's Point, and Twah access points.

NF 2d. Work with land conservation coalitions and land managers to secure recreation easements or other public access of lands managed by IDL.

NF 3. Ensure water quality on the river below Payette Lake.

NF 3a. Develop and define new river access points to provide recreational experiences and maintain river vegetation.
NF 3b. Buffer from grazing uses.
NF 3c. Prohibit untreated sewage wastewater discharges into the river.
NF 3d. Evaluate a reasonable and feasible minimum stream flow in this reach (and others) and work with Water Resource Board to adopt the recommendations.
NF 3e. Work with IDFG and water users on maintaining water temperature to support the river fishery.

NF 4. Enhance and maintain access to a unique river experience below Lake Cascade to Smith's Ferry.

NF 4a. Implement and enforce contained waste management for overnight rafting trips (USFS requirement to have contained waste and pack out).
NF 4b. Develop management to track users, educate users on impacts, and create accountability (e.g., information permit system).
NF 4c. Develop parking management plan for Cabarton river access and implement parking pass permit system.
NF 4d. Update Valley County Waterways Ordinance to reinforce non-motorized use below Lake Cascade and others as needed.

KEYSTONE INDICATORS		
Indicator	***Baseline #***	***Desired Future Condition***
User Satisfaction	Future survey needed to determine surveyed rate overall experience as excellent	Maintain greater than 75% feeling of excellent experience
User numbers at Cabarton Bridge Launch	Future counts needed	TBD
Turbidity/Sediment	"Well below"	25 mg/L target and 50 mg/L monthly average
Water temperature (mean daily average as measured at Payette Lake Outflow)	62.1°F [1]	55°F [2]

[1] North Fork Payette River Water Quality Monitoring Report, IDEQ 2019

[2] North Fork Payette River Subbasin Assessment and Total Maximum Daily Load, July 2005, https://www2.deq.idaho.gov/admin/LEIA/api/document/download/11985

Louie Lake. Jon Conti

ALPINE LAKES VISION

Desired Future Condition

Maintain the function of lake and stream ecosystems in high mountain lakes, especially within wild areas.

Community Input on Waterway Concerns

- Increase in dispersed use
- Impacts from camping and fires
- Backcountry recreation management

PRIORITY STRATEGIES

AL 1. Maintaining the pristine nature of alpine lakes.

AL 1a. Work with the USFS to expand education on backcountry safety, know before you go, responsible outdoor recreation practices, and pack it in/pack it out ethics.

AL 1b. Expand backcountry use education on Valley County trailhead and access points.

AL 1c. Work with local communities to provide classes on backcountry recreation, education, wilderness first aid, etc.

AL 1d. Work with the USFS to monitor backcountry campsites every five years for barren ground, human waste, soil compaction, presence of noxious weeds to maintain ecosystem function.

AL 1e. If monitoring indicates a poor impact rating, work with the USFS to implement no camping within 200-feet of waterway or a designated dispersed camping area system.

AL 1f. Explore a minimum area for motorized watercraft on smaller water bodies.

KEYSTONE INDICATORS		
Indicator	***Baseline #***	***Desired Future Condition***
User Satisfaction	Future data needed to determine surveyed rate overall experience as excellent	Maintain greater than 75% feeling of excellent experience
Overall Impact Rating (Ground Disturbance, Tree Damage, & Disturbed Area)	Collect baseline data	<4 [1]

[1] USFS Wilderness Campsite Inventory Form & Rapid Assessment Campsite Condition Rating Guide, McCall and New Meadows District of the Payette National Forest.

Chad Case

CHAPTER 4: ADAPTIVE MANAGEMENT PLAN

A PLAN IN ACTION

This Chapter outlines how adaptive management, keystone indicators, strategies, and triggers are structured to improve Valley County's waterways. The adaptive management program responds to increased use, development, and changing environmental conditions at an increasing rate. Chapter 3 emphasizes the waterways' desired future condition and priority strategies for successful Plan implementation. Tying this Plan to the everyday responsibilities of agencies, partners, and decision-makers and connecting its strategies directly to County-wide and jurisdiction initiatives and policies will ensure a defined action plan. This tailored implementation and monitoring program meets not only the current needs for waterway management but responds to changing circumstances and future needs based on a series of keystone indicators and desired future condition targets.

Chapter 4 outlines:

- "What is an Adaptive Management Program?"
- "What should we do now, and what are our first initiatives?"
- "What should we do if the condition deteriorates?"
- "How do we monitor success and who is responsible for monitoring?"
- "How do we ensure the Plan is living and continues to adapt?"

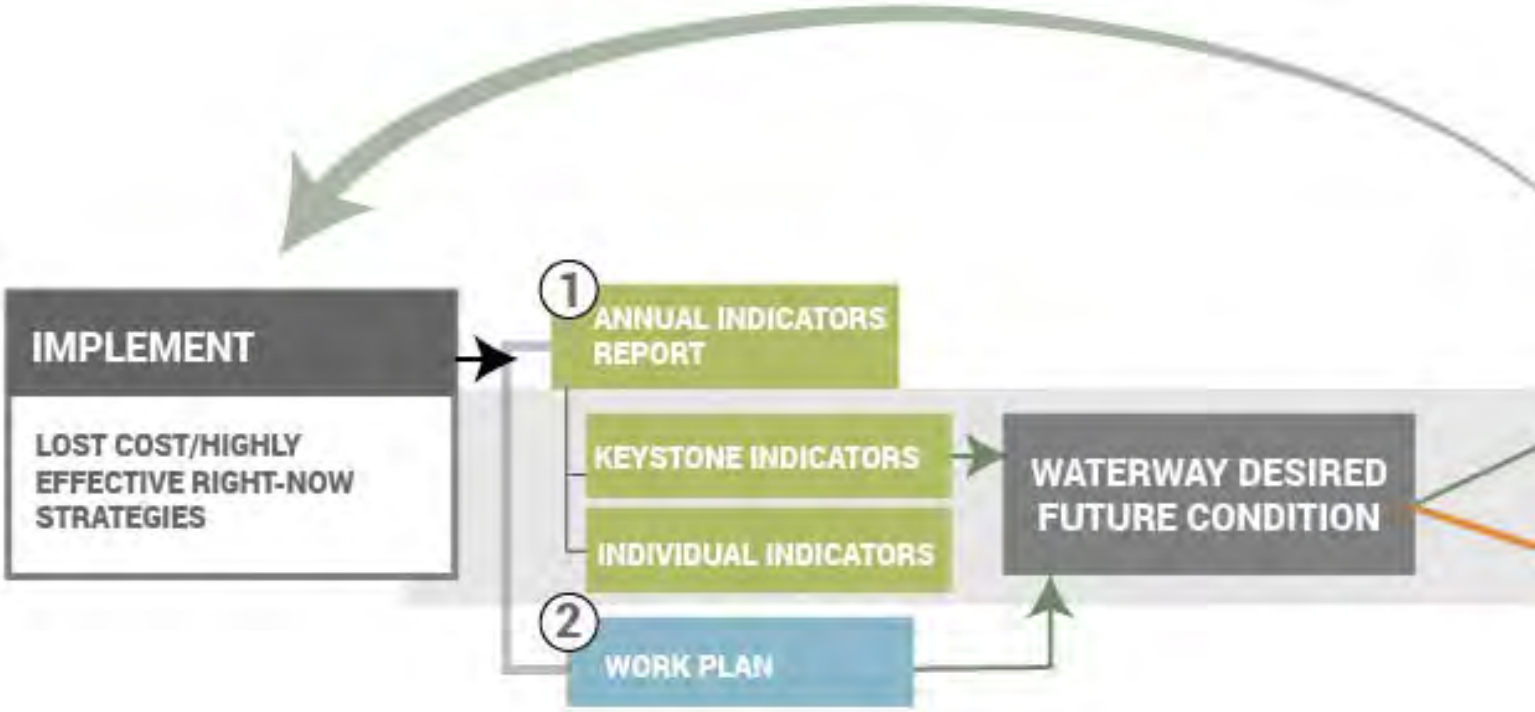
There is not a silver bullet nor is it up to one entity to protect our water quality and provide for responsible recreation – meeting the vision of the Waterways Management Plan will require we all do our part.

The adaptive management program is not a federal or state document but a community document that addresses land use, recreation, and the environment. Federal and state plans directly addressing water quality are already planned or in place. The Plan is oriented toward what Valley County and its cities can do, knowing that non-profit, state, and federal agencies also have ongoing efforts to protect our waterways. Future data collection, monitoring, and implementation of desired policy will be needed.

ADAPTIVE MANAGEMENT PROGRAM

The Adaptive Management Program is a quantitative review structure that provides the measurability and accountability needed to ensure the community will achieve this Plan's vision. The Adaptive Management Program allows the community to be adaptive, responsible, and decisive in optimizing the vision. The adaptive management program is supported by a quantitative review structure that provides the measurability and accountability needed to ensure the community will achieve the desired future condition. In other words, if sustainable land-use practices, recreation experience, and water quality are met, the Plan's strategies can be very targeted. However, if conditions remain the same or are deteriorating, we need to be proactive and implement the communities' defined strategies to ensure what we love remains the same or is better than we left it.

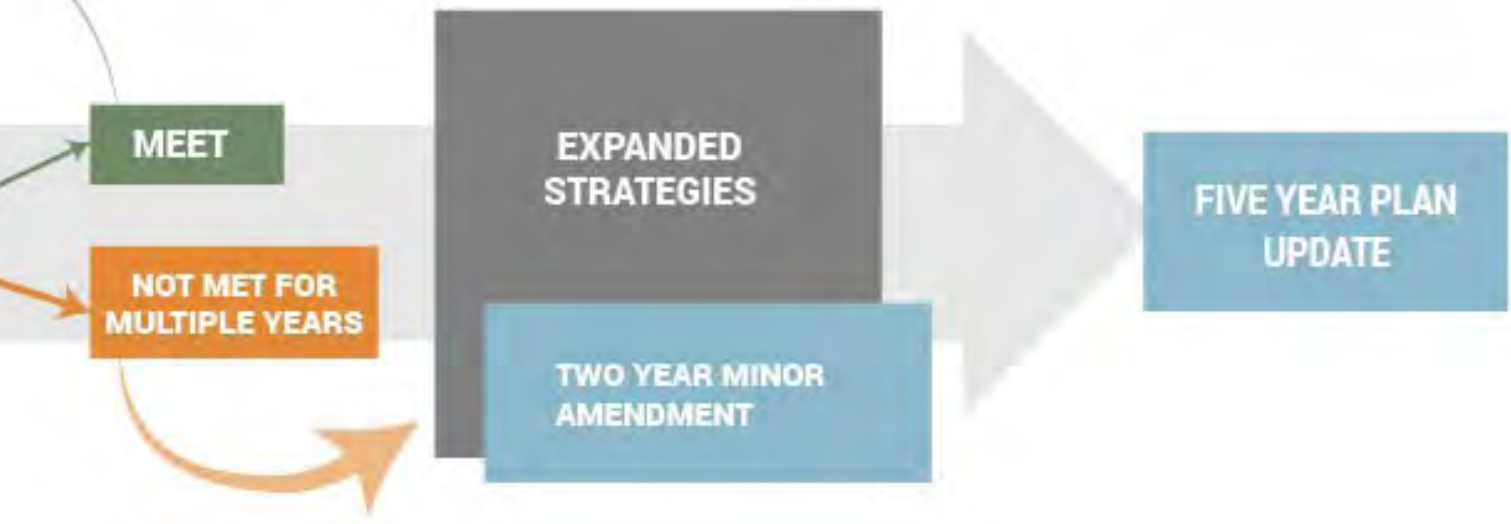
All keystone indicators in this report all currently being gathered primarily by IDEQ, Friends of Lake Cascade, IDFG, among others. These indicators were chosen based on the issues unique to each waterway and desired future conditions. They are efficient for County and City staff to report as they are accurate, reproducible, obtainable, and affordable. A brief annual indicator report will be placed on the County's waterways website so the public can stay informed on the state of the waterways. Triggers and indicator feedback mechanisms provide a structure to continuously verify the community's path and correct course when necessary, noting that it may be beneficial to use averages over two or three years before some strategies are implemented. Multiple strategies, tools, partnerships, and actions can lead to the desired change in the indicator baseline. While corrective strategies are identified, they may not be the only measures taken to meet the desired future condition. Partners should meet when a keystone indicator trigger is hit to determine a complete and practical approach forward.



Donnelly Chamber of Commerce

The trend data in key indicators measures the success or failure of management actions and provides an “early warning system” for issues along our waterways. Therefore, management strategies must be adjusted to reverse negative trends approaching or exceeding a trigger (not meeting the desired future condition). A trigger is an endpoint, while trend data is a continuum that needs to be evaluated yearly. Progress will be gauged yearly and determined by whether there are significant differences in variables from the previous year’s data. As the Plan outlines, the County, Cities, the IDEQ, IDFG, and other agencies know that specific indicators and associated triggers are already exceeded. Therefore, immediate County- and City- initiated strategies that are listed in the 6th column in the following tables are recommended.

The following table outlines by waterway each keystone indicator, the agency that is currently collecting the data, current baseline conditions, and desired future conditions. If a keystone indicator has been triggered, immediate strategies should be considered. If the condition declines over two or three years or there is a goal to enhance the waterbody, additional strategies listed in the last column should be followed.



ADAPTIVE MANAGEMENT AND ACTION PLAN						
Indicator	*Who is Collecting this Data?*	*Baseline*	*Desired Future Condition*	*Has this Indicator Been Triggered?*	*Immediate Strategies and Ease of Implementation*	*Not Meeting Desired Future Condition for 2-3 Years or Goal to Enhance*
Lake Cascade						
User Satisfaction	County and City	75% surveyed rate overall experience as excellent	Maintain greater than 75% feeling of excellent experience	**No**	LC 1a, LC 1b, LC 1c, LC 1d	LC 1e
Incidents	County Sheriff	113 warnings issued per year (across Valley County)	Maintain less than <100 warnings per year (across Valley County)	**No**	LC 1a, LC 1c	LC 1d, LC 1d
Feeling of extreme crowdedness	County and City	10% surveyed	<20% surveyed	**No**	LC 1a, LC 1b	LC 1a, LC 1c, LC 1d
Health Advisories Issued	IDEQ, CDH	1 issued in 2022, 2021, 2020, 2019	No health advisories	**Yes**	LC 1b, LC 1g, LC 2d, LC 3a, LC 3d	LC 2a, LC 2b, LC2c, LC 2e, LC 3b, LC 3c
Total Phosphorus	IDEQ	0.03-0.06 mg/L	<0.025 mg/L	**Yes**	LC 1b, LC 2c, LC 2d, LC 2e, LC 3a, LC 3d	LC 2a, LC 2b, LC2c, LC 2e, LC 3b, LC 3c
Water Clarity (Secchi disk readings)	Friends of Lake Cascade	0 - 20.5 ft	> 6ft	**Yes**	LC 1b, LC 1g, LC 2d, LC 3a, LC 3d	LC 2a, LC 2b, LC 2c, LC 3b, LC 3c
Dissolved Oxygen	IDEQ	<6 mg/L	>6 mg/L	**Yes**	LC 1b, LC 1g, LC 2b, LC 2e, LC 3a, LC 3d	LC 1f, LC 2a, LC 2b, LC 2c, LC 3b, LC 3c
Water Temperature	IDEQ, Friends of Lake Cascade	75°F max	<22°C (71.6°F) max, <19°C (66°F) avg	**Yes**	LC 1b, LC 1g, LC 2c, LC 2d, LC 3a, LC 3d	LC 2a, LC 2b, LC 2c, LC 3b, LC 3c
Carrying Capacity (Boats at one time)	County and City	161 (High)	368 (at 40 acres per boat)	**No**		

ADAPTIVE MANAGEMENT AND ACTION PLAN						
Indicator	*Who is Collecting this Data?*	*Baseline*	*Desired Future Condition*	*Has this Indicator Been Triggered?*	*Immediate Strategies and Ease of Implementation*	*Not Meeting Desired Future Condition for 2-3 Years or Goal to Enhance*
Big Payette Lake						
User Satisfaction	County and City	84% surveyed rate overall experience as excellent	Maintain greater than 75% feeling of excellent experience	**No**	BP 1a, BP 1b, BP 2b, BP 3a	BP 3b, BP 3c, BP 3d
Incidents	County	113 warnings issued per year (across Valley County)	Maintain less than <100 warnings per year (across Valley County)	**No**	BP 1b, BP 1c, BP 3a	BP 3b, BP3c, BP 3d
Feeling of extreme crowdedness	County and City	13% surveyed stated feeling extremely crowded	Maintain less than 30% feeling of crowdedness	**No**	BP 1a, BP 1b	BP 3b, BP 3c, BP 3d
Dissolved Oxygen	IDEQ	>6 mg/L	>6 mg/L (above 200 foot depth)	**No**		BP 2c, BP 2d, BP 2e, BP 4a, BP 4b, BP 4c, BP 4d
Total Phosphorus	IDEQ	.0047 - .0062 mg/L	<0.006 mg/L	**No**		BP 2c, BP 2d, BP 4a, BP 4b, BP 4c, BP 4d
Carrying Capacity (Boats at one time)	County and City	76 (High)	102 (at 40 acres per boat)	**No**		BP 3b, BP 3c, BP 3d
Acres of No wake Areas	County and City	771	1,003 (based on expanding the no wake distances in targeted areas)	**No**	BP 1a	NA
Length of Shoreline in Conserved Public Lands and Available for Public Access	City	7 miles (27%)	Increase to greater than 35%	**Yes**	BP 2a, BP 2b	BP 3d, BP 1e, BP 4e

ADAPTIVE MANAGEMENT AND ACTION PLAN						
Indicator	*Who is Collecting this Data?*	*Baseline*	*Desired Future Condition*	*Has this Indicator Been Triggered?*	*Immediate Strategies and Ease of Implementation*	*Not Meeting Desired Future Condition for 2-3 Years or Goal to Enhance*
Warm Lake						
Carrying Capacity (Boats at one time)	County and City	52 (High)	64 (at 10 acres per boat)	**No**	WL 1d, WL 1e, WL 1f	WL 1g, WF 1h
Nitrogen	TBD	Future Testing Required	0.006 mg/L	**TBD**	WL 1a, WL 1b, WL 1c, WL 1f, WL 1g	WL 2a, WL 2b, WL 2c
Temperature	TBD	Future Testing Required	<22°C max, <19°C avg	**TBD**	WL 1f	

ADAPTIVE MANAGEMENT AND ACTION PLAN						
Indicator	*Who is Collecting this Data?*	*Baseline*	*Desired Future Condition*	*Has this Indicator Been Triggered?*	*Immediate Strategies and Ease of Implementation*	*Not Meeting Desired Future Condition for 2-3 Years or Goal to Enhance*
North Fork of Payette River & Tributaries (Above Payette Lake, Below Payette Lake, and Below Lake Cascade)						
User Satisfaction	County and City	Future survey needed to determine surveyed rate overall experience as excellent	Maintain greater than 75% feeling of excellent experience	**No**	NF 1a, NF 1b, NF 1c, NF 1d, NF ld, NF 2a, NF 2b, NF 2c, NF 4d	NF 2d, NF 3a
User Numbers at Cabarton Bridge Launch	County	Future counts needed	TBD	**TBD**	NF 1a, NF 1b, NF 1c, NF 1d, NF 2a, NF 2b, NF 2c, NF 4c	
Turbidity/ Sediment	IDFG	"Well below"	25 mg/L target and 50 mg/L monthly average	**No**	NF 3d, NF 1e, NF 3e, NF 4a, NF 4b, NF 4d	NF 3b, NF 3c
Average Water Temperature (as measured at Payette Lake Outflow)	IDFG	61.2°F	55°F	**No**	NF 3d, NF 1e, NF 3e, NF 4a, NF 4b, NF 4d	NF 3b, NF 3c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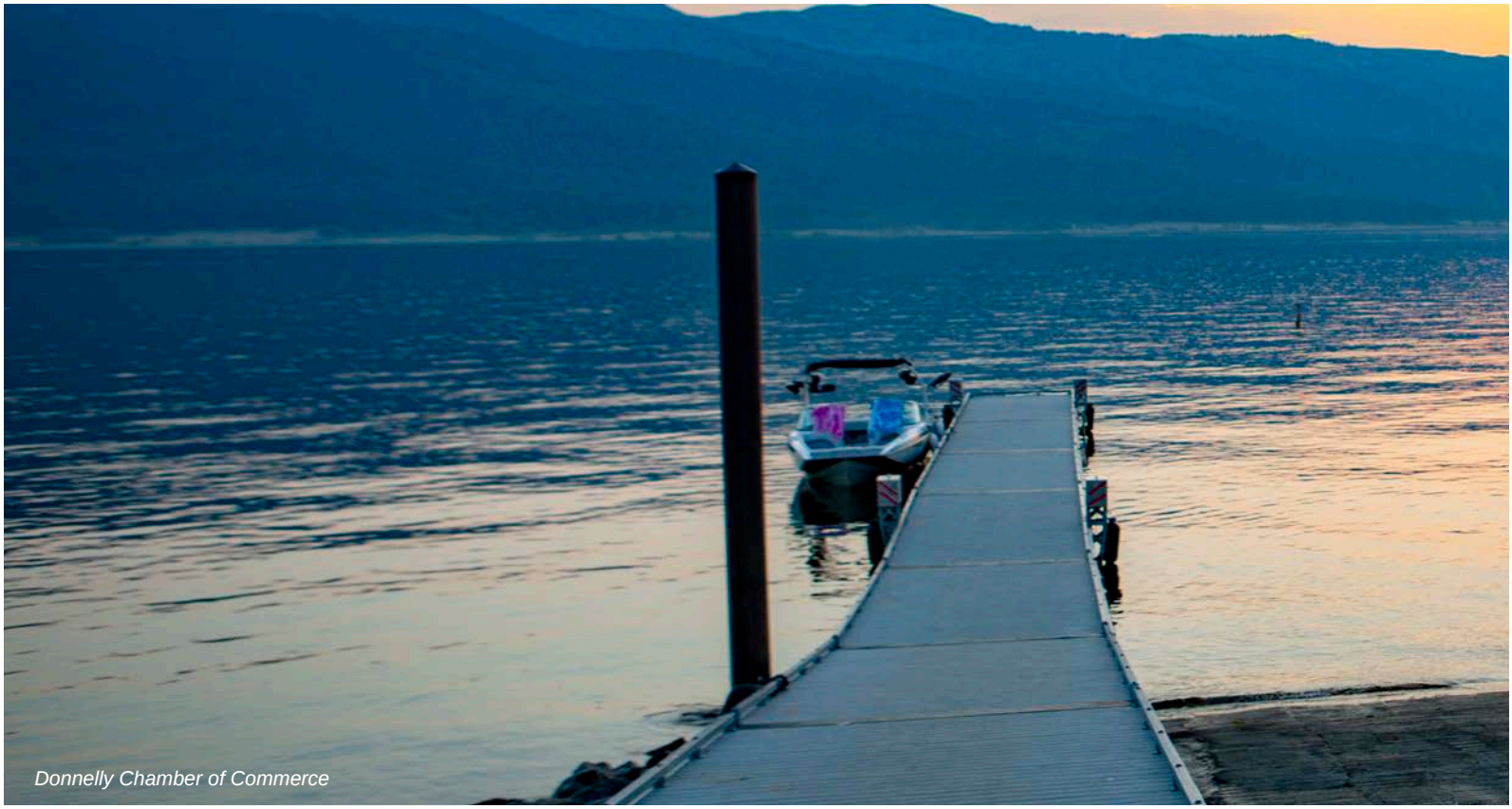
ADAPTIVE MANAGEMENT AND ACTION PLAN						
Indicator	*Who is Collecting this Data?*	*Baseline*	*Desired Future Condition*	*Has this Indicator Been Triggered?*	*Immediate Strategies and Ease of Implementation*	*Not Meeting Desired Future Condition for 2-3 Years or Goal to Enhance*
Alpine Lakes						
User Satisfaction	McCall Master Naturalists and USFS	Future survey needed to determine surveyed rate overall experience as excellent	Maintain greater than 75% feeling of excellent experience	**No**	AL 1a, AL 1b, AL 1c, AL 1d	AL 1e
Overall Impact Rating (Ground Disturbance, Tree Damage, & Disturbed Areas)	McCall Master Naturalists and USFS	Collect baseline data	<4	**No**	AL 1a, AL 1b, AL 1c, AL 1d	AL 1e



Donnelly Chamber of Commerce

PLAN IMPLEMENTATION

This Plan is consistent with what the National Academy of Sciences outlines as Adaptive Management. However, it is a County-based plan recognizing the connection between community, land use, recreation, and our natural environment.

ANNUAL INDICATOR REPORT, WORK PLANS, AND MONITORING WEBSITE

A brief annual indicator report will be produced consisting of keystone and supplemental individual indicators. Alternatively, a dashboard could be set up on the website, providing quick access to information and links to other online data. Annual indicator reports should be designed to evaluate the community's progress toward achieving the vision. These annual snapshots should be summarized and presented to other technical working groups and forums. Other agencies may also be prepared to give their annual reports, progress, and data at this time. Through these yearly indicator reports, the community will understand how we are measuring up and will have the information needed to proactively input into annual work plans.

A yearly work plan for implementing the Plan as part of the budget process would complement the annual indicator report. In setting the work plan, the community should evaluate the work completed over the past year, review annual indicators, and prioritize strategies for implementation. The work plan may also include the implementation of preemptive strategies before triggering a strategy, plan amendment, or plan update. As strategies are completed and/or new best practices, technology, and information become available, the work plan may include strategies that are not listed. However, every task in the work plan should be relevant to the Plan's Vision, implementable by the responsible party and effective in addressing the focus areas and community input on waterway concerns.

A LIVING PLAN AND UPDATE CYCLE

This Plan will be living, allowing it to adapt to changes. Annual monitoring enables the ability to react quickly. If keystone indicators in the Plan are triggered for multiple years, minor updates to the Plan should occur ***every two years***. Once minor amendments are initiated, the staff, Technical Advisory Group (TAG), Boards, and Commissions will go through targeted amendments. While additional or more stringent strategies may not be the most desired outcome, they may be necessary for progress toward the desired result. This update will allow the addition of current data, removal of additional key indicators and strategies, and the incorporation of completed plans and strategies.

Plan amendments, if necessary, should occur with the annual indicator report. Consideration could occur at the same yearly meetings where the annual indicator report is reviewed and the implementation work plan for the following year is set. This promotes a simultaneous and comprehensive review of proposed amendments, indicators, strategies, and the work plan to adapt to the current conditions. Concurrent reviews encourage adaptation to changing conditions while discouraging overreaction to opportunities that do not adequately address specific issues. New and/or strengthened strategies with the County and City and agencies like the IDEQ may need to be established. If land use, recreation, or water quality conditions deteriorate, strategies are not implemented, regulations are not being followed, and/or if BMPs are determined to be ineffective; then the County, Cities, and agencies will work with their partners to ensure corrective steps are taken. During these periods, additional monitoring and special studies in response to specific needs may be identified.

If no annual indicators are triggered, the Plan should be updated at ***least every five years***. A more extensive public process should ensure the Plan always meets the County's vision. An update should occur even if a keystone indicator was not triggered and we are meeting our targets. Regular, informed, and focused updates to the Plan will allow the community to affirm its values and identify new implementation strategies. The five-year update should be a community effort built on the lessons learned through 5 years of annual indicator reports.

Logan Simpson

PARTNERSHIPS

As part of a living and adaptable plan, annual conversations with the County, McCall, Cascade, and Donnelly communities should continue during indicator reviews, minor amendments, and plan updates. This engagement fosters more effective outcomes and enhances support for those outcomes. Part of the annual monitoring and implementation of the Plan will be consistent outreach on the community's values and implementation priorities

The community's ability to achieve this Plan's priorities is intertwined with the ability to cooperate and communicate with non-profit, local, state, and federal agencies. The County and Cities will continue coordinating with nearby land managers to implement this Plan's framework, identify shared interests and available resources, and address issues affecting the entire ecosystem.

Roles and Responsibilities

- The County and City planning and parks staff are responsible for producing annual indicator reports, conducting surveys, executing yearly work plans, making minor amendments, and updating the Plan.
- The TAG and partners are responsible for providing indicators data and working towards implementation actions. They are also conducting complimentary studies and initiatives supporting the same objectives.
- The community is responsible for living harmoniously with the natural setting and following rules and regulations put in place to protect our waterways for generations to come. The local and visiting communities are also instrumental in reaching out to those who live and use the waterways.

FUNDING

Maintaining high water quality and attractive recreation amenities will result in greater recreational demand and an increase in the amount of local and visitor use, which may necessitate the implementation of additional funding sources. A multi-layered approach to funding will be necessary, including:

- Actions with high benefits at little cost
- Working with watershed partners and landowners
- Parking and launch user fees
- County-wide recreation permit
- Recreation districts
- General funds
- Park and open space impact fees
- Concessionaires
- Grants
- Donations

Fees are often prorated based on resident vs. visitor, income, location, and other factors. Having this additional funding that can be used for enforcement and planning staffing will help support the community's goals and create high-quality and safe waterways. The lack of funding commitments has been the most significant obstacle to making progress with implementing many other waterway plans. The resources required to implement these strategies should be considered, along with the parties responsible for implementing the strategy, the timeframe for implementing the strategy, and the effectiveness of each strategy.

Donnelly Chamber of Commerce

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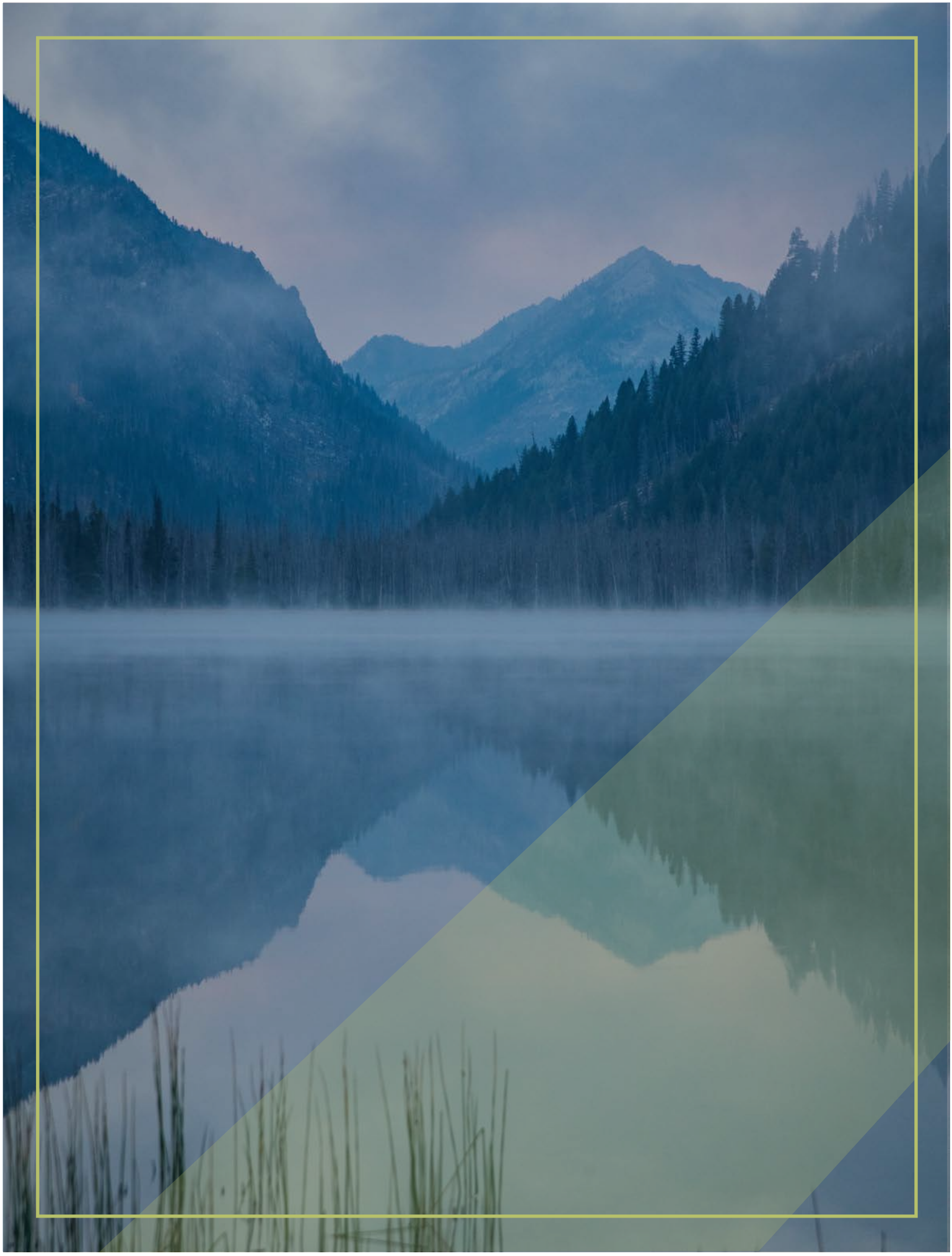

Regulatory Announcement

ATTACHMENT 5

EPA Finalizes Emission Standards for New Nonroad Spark-Ignition Engines, Equipment, and Vessels

The U.S. Environmental Protection Agency (EPA) is adopting new exhaust emission standards for marine spark-ignition engines and small land-based nonroad engines. EPA is also adopting evaporative emission standards for equipment and vessels using these engines. These standards apply only to newly manufactured products. The standards will reduce the harmful health effects of ozone and carbon monoxide from these engines, equipment, and vessels.

Which engines and vehicles are affected?

We are adopting new standards for emissions of hydrocarbons (HC), nitrogen oxides (NOx), and carbon monoxide (CO) from a variety of nonroad engines, equipment, and vessels that cause or contribute to air pollution. The controls for these products have been combined into one rulemaking because these engines and vehicles share many common characteristics. Differences in their design and use led us to adopt separate emission standards for each group.

- Small Nonroad Spark-Ignition Engines and Equipment: Spark-ignition (SI) nonroad engines rated below 25 horsepower (19 kW) used in household and commercial applications, including lawn and garden equipment, utility vehicles, generators, and a variety of other construction, farm, and industrial equipment.
- Marine Spark-Ignition Engines and Vessels: Spark-ignition engines used in marine vessels, including outboard engines, personal watercraft, and sterndrive/inboard engines.

EPA United States Environmental Protection Agency

Office of Transportation and Air Quality
EPA420-F-08-013
September 2008

What are the differences between the final rule and the proposed rule?

Several minor changes from the proposed rule are being adopted in the final rule. These changes reflect important cooperative efforts between EPA and the regulated industries to implement cleaner technology as early as possible while still providing communities across the United States with needed emissions reductions.

First, the implementation dates for Marine Outboard/Personal Watercraft (OB/PWC) and Sterndrive/Inboard (SD/I) exhaust emissions standards are being delayed one year to allow sufficient time for manufacturers to convert their entire product line-ups to lower emissions simultaneously while adopting to supplier changes. Second, modifications are being made to the Marine SD/I High Performance (>373 kW) exhaust emissions requirements to reflect the limitations of catalyst technology on these engines. Lastly, we are adopting provisions for cold weather evaporative emission standards to reflect the capability of fuel line materials and adding a phase-in for marine diurnal standards. Both of these changes will enhance the safety of the new requirements.

Why is EPA regulating these engines, equipment, and vessels?

The engines and vehicles covered by this rule are significant sources of air pollution. They account for about 26 percent of mobile source VOC emissions and 23 percent of mobile source carbon monoxide emissions. With the new controls, VOC pollutants will be further reduced by 34 percent for Small SI engines and 70 percent for Marine SI engines by 2030. With the new controls, CO pollutants will be further reduced by 9 percent for Small SI engines and 19 percent for Marine SI engines by 2030.

The new standards continue the process of establishing nonroad standards as required by the Clean Air Act. We are required to study emissions from nonroad engines and vehicles and to set emissions standards if the level of pollutants from these sources cause or significantly contribute to air pollution and, more specifically, if the emissions of CO, NOx or hydrocarbons contribute significantly to the formation of ozone and carbon monoxide in more than one area of the country currently not meeting ozone and carbon monoxide standards. We completed the Nonroad Engine and Vehicle Emission Study in 1991, and in 1994 determined that these sources contribute significantly to ozone or CO nonattainment. We have already set emission standards for most nonroad engines, including farm and construction equipment, locomotives, commercial marine, and recreational vehicles.

What are the New Requirements?

The new requirements vary depending on the kind of engine or vehicle. In developing these requirements, we considered specific factors for each type. Among the factors considered were the environmental impacts, the number of hours each year that the engine is used, the need for high-performance operation, and the costs. The new requirements for each type of engine and vehicle are:

Small Nonroad Engines

We are adopting HC+NOx exhaust emission standards of 10 g/kW-hr for Class I engines starting in the 2012 model year and 8 g/kW-hr for Class II engines starting in the 2011 model year. We expect manufacturers to meet these standards by improving fuel systems, engine combustion and in some cases adding catalysts. These standards are consistent with the requirements recently adopted by the California Air Resources Board (ARB). We are not adopting new exhaust emission standards for handheld emissions.

For spark-ignition engines used in marine generators, we are adopting a more stringent Phase 3 CO emission standard of 5 g/kW-hr. This applies equally to all sizes of small SI engines used in marine generators.

We are adopting new evaporative emission standards for both handheld and nonhandheld equipment. The new standards include requirements to control fuel tank permeation, fuel line permeation, and diffusion emissions. For nonhandheld engines we also require control of running losses.

When fully implemented, the new standards will result in a 35 percent reduction in HC+NOx emissions from new engines' exhaust. The new standards will reduce evaporative emissions by 45 percent.

Marine spark-ignition engines and vessels

We are adopting a more stringent level of emission standards for outboard and personal watercraft engines starting with the 2010 model year. The HC+NOx standard for engines producing less than or equal to 4.3 kW maximum power is 30 g/kWh and for engines producing greater than 4.3 kW have a standard that gradually increases based on the engine's maximum power. The CO standard for engines producing less than or equal to 40 kW gradually increases based on the engine's maximum power. The CO standard for engines with maximum power greater than 40 kW is 300 g/kWh. We expect manufacturers to meet these standards with improved fueling systems and other in-cylinder controls. The federal levels of the HC+NOx standards are consistent with the requirements recently adopted by California ARB with the addition of a first-ever CO standard for this category of nonroad engines.

We are adopting new exhaust emission standards for sterndrive and inboard marine engines. The standards are 5 g/kW-hr for HC+NOx and 75 g/kW-hr for CO starting with the 2010 model year. We expect manufacturers to meet these standards with three-way catalysts and closed-loop fuel injection. To ensure proper functioning of these emission control systems in use, we will require manufacturers to diagnose engines for failure in the emission control system.

For sterndrive and inboard marine engines above 373 kW with high-performance characteristics (generally referred to as "SD/I high-performance engines"), we are adopting a CO standard of 350 g/kW-hr. We are adopting a HC+NOx standard of 20 g/kWh for high-performance engines producing between 373 and 485 kW in 2010 followed by a tightened standard of 16 g/kWh in 2011. For high-performance engines producing greater than 485 kW, we are adopting a HC+NOx standard of 25 g/kWh in 2010 and 22 g/kWh in 2011. We are also adopting a variety of other special provisions for high-performance engines to reflect unique operating characteristics.

The emission standards described above relate to engine operation over a prescribed duty cycle for testing in the laboratory. We are also adopting "not-to-exceed" standards that require manufacturers to maintain a certain level of emission control when engines operate under normal speed-load combinations that are not included in the certification duty cycle.

We are also adopting new standards to control evaporative emissions for all vessels using marine spark-ignition engines. The new standards include requirements to control fuel tank permeation, fuel line permeation, and diurnal fuel tank vapor emissions, including provisions to ensure that refueling emissions do not increase.

When fully implemented, the new standards will result in an estimated 70 percent reduction in HC+NOx emissions and a 50 percent reduction in CO from new SD/I engines' exhaust. The standards will also result in a 60 percent reduction in HC+NOx emissions from OB/PWC engines. The new standards will reduce evaporative emissions by about 70 percent.

Health and Environmental Benefits

We estimate that by 2030, the new standards will result in significant annual reductions of pollutant emissions from regulated engine and equipment sources nationwide, including approximately 600,000 tons of volatile organic hydrocarbon emissions, 130,000 tons of NOx emissions, and 5,500 tons of direct particulate matter ($PM_{2.5}$) emissions. These reductions correspond to significant reductions in the formation of ground-level ozone and ambient $PM_{2.5}$. We also expect to see annual reductions of 1.5 million tons of carbon monoxide emissions, with the greatest reductions in situations where there have been problems with individual exposures. The final rule will result in substantial benefits to public health and welfare and the environment. We estimate that by 2030, on an annual basis, these emission reductions will prevent 230 PM-related premature deaths, between 77 and 350 ozone-related premature deaths, approximately 1,700 hospitalizations and emergency room visits, 23,000 work days lost, 180,000 lost school days, 590,000 acute respiratory symptoms, and other quantifiable benefits every year. The total estimated annual benefits of this rule in 2030 are approximately between $1.6 and $4.4 billion. Estimated costs in 2030 are many times less, at approximately $190 million.

Costs

The estimated annualized cost of the new exhaust and evaporative emissions standards is $391 million, assuming a seven percent discount rate over 30 years. The corresponding annualized fuel savings due to more efficient controls is $155 million. As a result, the net annualized cost of the program is $236 million.

The results of the economic impact modeling performed for the Small SI and Marine SI engines and equipment control programs suggest that the social costs of those programs are expected to be about $459 million in 2030 with consumers of these products expected to bear about 86 percent of these costs. We estimate fuel savings of about $273 million in 2030 that will accrue to consumers.

For More Information

You can access the rule and related documents on EPA's Office of Transportation and Air Quality (OTAQ) Web site at:

www.epa.gov/otaq/equip-ld.htm or www.epa.gov/otaq/marinesi.htm

For more information on this rule, please contact the Assessment and Standards Division at:

U.S. Environmental Protection Agency
Office of Transportation and Air Quality
2000 Traverwood Drive
Ann Arbor, MI 48105
Information Line:734-214-4636
E-mail: asdinfo@epa.gov

ATTACHMENT 6

Annual Drinking Water Quality Report

City Of McCall Water Treatment Facility
July, 2011

We are pleased to present to you this year's Annual Quality Water Report. This report is designed to inform you about the quality water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water. Our water source is Payette Lake. There are two intake pump stations, Davis Beach and Legacy Park. Water is pumped to the Water Treatment plant in Spring Mountain Ranch. The City of McCall had one water quality violation in 2010. Total Haloaceitic Acids were .062 mg/l on July 23, 2010. The maximum contaminant level for HAAs is .060 mg/l. We are testing HAAs quarterly in 2011. The first two tests were within legal limits.

If you have any questions about this report or concerning your water utility, please contact **John Lewinski at 634-1853.** We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled meetings. They are held **every other Thursday at City Hall.**

The City Of McCall Water Treatment Facility routinely monitors for constituents in your drinking water according to Federal and State laws. This table shows the results of our monitoring for the period **of January 1, 2009 to December 31, 2010.** We are required to monitor other parameters periodically and they are listed as well and the dates of when they were last tested. All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It is important to remember that the presence of these constituents does not necessarily pose a health risk.

In this table, you will find many terms and abbreviations you may not be familiar with. To help you better understand these terms we have provided the following definitions:

N/A - Not applicable

Non-Detects (ND) - Laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/l)

Parts per billion (ppb) or Micrograms per liter (ug/L)

Parts per trillion (ppt) or Nanograms per liter (nanograms/l)

Parts per quadrillion (ppq) or Picograms per liter (picograms/l)

Picocuries per liter (pCi/L) - Picocuries per liter is a measure of the radioactivity in water.

Millirems per year (mrem/yr) - Measure of radiation absorbed by the body.

Million Fibers per Liter (MFL) - Million fibers per liter is a measure of the presence of asbestos fibers that are

longer than 10 micrometers.
Nephelometric Turbidity Unit (NTU) - Nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Action Level - The concentration of a contaminant, which, if exceeded, triggers treatment, or other requirements, which a water system must follow.

Treatment Technique (TT) - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level - The "Maximum Allowed" (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal - The "Goal"(MCLG) is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
Microbiological Contaminants							
1. Total Coliform Bacteria	N	ND		0	Monthly	Presence of coliform bacteria in 5% of monthly samples	Naturally present in the environment
2. Fecal coliform and *E.coli*	N/A			0		A routine sample and repeat sample are total coliform positive, and one is also fecal coliform or *E. coli* positive	Human and animal fecal waste
3. Turbidity	N	.180	NTU	1.0	Continuous monitoring at the Water Treatment Plant	1.0	Soil runoff
Radioactive Contaminants							
4. A Gross Alpha	N	<1.0	pCi/l		2/03	15	Erosion of natural deposits
B Gross Beta	N	3.1	pCi/l		2/03	50	Erosion of Natural Deposits
C Radium 226	N	<.2	pCi/l		2/03	3	Erosion of Natural Deposits
D Radium 228	N	<1.0	pCi/l		2/03		Erosion of Natural Deposits
Total Measured Radium	N	<.2	pCi/l		2/03	5	Erosion of Natural Deposits
5. Alpha emitters	N	0.0	pCi/1	0		15	Erosion of natural deposits

Inorganic Contaminants. Sodium was also analyzed in 2010. The result was 6.02 mg/l.							
7. Antimony	N	ND	ppb	6	7/10	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
8. Arsenic	N	<.003	ppb	.01	7/10	50	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
9. Asbestos	N	<.083	MFL	7	11/04	7	Decay of asbestos cement water mains; erosion of natural deposits
10. Barium	N	ND	ppm	2	7/10	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits

TEST RESULTS							
Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
11. Beryllium	N	ND	ppb	4	7/10	4	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
12. Cadmium	N	ND	ppb	5	7/10	5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
13. Chromium	N	2	ppb	100	7/10	100	Discharge from steel and pulp mills; erosion of natural deposits
14. Copper	N	0.459	ppm	1..3	7/08	AL=1..3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
15. Cyanide	N	N\D	ppb	200	3/04	200	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
16. Fluoride	N	ND	ppm	4	7/10	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
17. Lead	N	11.5	ppb	0	8/08	AL=15	Corrosion of household plumbing systems, erosion of natural deposits
18. Mercury (inorganic)	N	ND	ppb	2	7/10	2	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
19. Nitrate (as Nitrogen)	N	<.10	ppm	10	2/10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
20. Nitrite (as Nitrogen)	N	ND	ppm	1	3/04	1	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
21. Selenium	N	ND	ppb	50	7/10	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
22. Thallium	N	ND	ppb	0.5	7/10	2	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories
Synthetic Organic Contaminants including Pesticides and Herbicides. 42 SOCs were analyzed in 2001. Several SOCs were analyzed in 2008. All were non-detectable. A complete list is available upon request.							
23. 2,4-D	N	N/D	ppb	70	3/04	70	Runoff from herbicide used on row crops
24. 2,4,5-TP (Silvex)	N	N/D	ppb	50	3/04	50	Residue of banned herbicide
25. Acrylamide	N	N/D		0	02/98	TT	Added to water during sewage/wastewater treatment
26. Alachlor	N	N/D	ppb	0	3/04	2	Runoff from herbicide used on row crops
27. Atrazine	N	N/D	ppb	3	3/04	3	Runoff from herbicide used on row crops
28. Benzo(a)pyrene (PAH)	N	N/D	nanograms/l	0	3/04	200	Leaching from linings of water storage tanks and distribution lines

29. Carbofuran	N	N/D	ppb	40	3/04	40	Leaching of soil fumigant used on rice and alfalfa
30. Chlordane	N	N/D	ppb	0	3/09	2	Residue of banned termiticide

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
31. Dalapon	N	N/D	ppb	200	3/04	200	Runoff from herbicide used on rights of way
32. Di(2-ethylhexyl) adipate	N	N/D	ppb	400	3/04	400	Discharge from chemical factories
33. Di(2-ethylhexyl) phthalate	N	N/D	ppb	0	3/04	6	Discharge from rubber and chemical factories
34. Dibromochloropropane	N	N/D	nanograms/1	0	02/98	200	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
35. Dinoseb	N	N/D	ppb	7	3/04	7	Runoff from herbicide used on soybeans and vegetables
36. Diquat	N	N/D	ppb	20	3/04	20	Runoff from herbicide use
37. Dioxin [2,3,7,8-TCDD]	N	N/D	picograms/l	0	2/98	30	Emissions from waste incineration and other combustion; discharge from chemical factories
38. Endothall	N	N/D	ppb	100	3/04	100	Runoff from herbicide use
39. Endrin	N	N/D	ppb	2	3/09	2	Residue of banned insecticide
40. Epichlorohydrin	N	N/D		0	02/98	TT	Discharge from industrial chemical factories; an impurity of some water treatment chemicals
41. Ethylene dibromide	N	N/D	nanograms/1	0	02/98	50	Discharge from petroleum refineries
42. Glyphosate	N	N/D	ppb	700	3/04	700	Runoff from herbicide use
43. Heptachlor	N	N/D	nanograms/1	0	3/09	400	Residue of banned termiticide
44. Heptachlor epoxide	N	N/D	nanograms/1	0	3/09	200	Breakdown of heptachlor
45. Hexachlorobenzene	N	N/D	ppb	0	3/04	1	Discharge from metal refineries and agricultural chemical factories
46. Hexachlorocyclo-pentadiene	N	N/D	ppb	50	3/04	50	Discharge from chemical factories
47. Lindane	N	N/D	nanograms/l	200	3/09	200	Runoff/leaching from insecticide used on cattle, lumber, gardens
48. Methoxychlor	N	N/D	ppb	40	3/09	40	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
49. Oxamyl [Vydate]	N	N/D	ppb	200	3/04	200	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
50. PCBs [Polychlorinated biphenyls]	N	N/D	nanograms/1	0	3/09	500	Runoff from landfills; discharge of waste chemicals
51. Pentachlorophenol	N	N/D	ppb	0	3/04	1	Discharge from wood preserving factories
52. Picloram	N	N/D	ppb	500	3/04	500	Herbicide runoff
53. Simazine	N	N/D	ppb	4	3/04	4	Herbicide runoff
54. Toxaphene	N	N/D	ppb	0	3/09	3	Runoff/leaching from insecticide used on cotton and cattle

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
Volatile Organic Contaminants. 26 VOC's were analyzed in 2010. All were non-detectable except total trihalomethanes. Total trihalomethanes were measured in 2010. The reading was 57.9 ppb. The maximum contaminant level is 80 ppb as a rolling average. Total Halocetic Acids in 2010 were .062 mg/l. The mcl for HAA is .060.							
55. Benzene	N	N/D	ppb	0	3/09	5	Discharge from factories; leaching from gas storage tanks and landfills
56. Carbon tetrachloride	N	N/D	ppb	0	3/09	5	Discharge from chemical plants and other industrial activities
57. Chlorobenzene	N	N/D	ppb	100	06/97	100	Discharge from chemical and agricultural chemical factories
58. o-Dichlorobenzene	N	N/D	ppb	600	3/09	600	Discharge from industrial chemical factories
59. p-Dichlorobenzene	N	N/D	ppb	75	3/09	75	Discharge from industrial chemical factories
60. 1,2 - Dichloroethane	N	N/D	ppb	0	3/09	5	Discharge from industrial chemical factories
61. 1,1 - Dichloroethylene	N	N/D	ppb	7	3/09	7	Discharge from industrial chemical factories
62. cis-1,2-ichloroethylene	N	N/D	ppb	70	06/97	70	Discharge from industrial chemical factories
63. trans - 1,2 - Dichloroethylene	N	N/D	ppb	100	06/97	100	Discharge from industrial chemical factories
64. Dichloromethane	N	N/D	ppb	0	3/09	5	Discharge from pharmaceutical and chemical factories
65. 1,2-Dichloropropane	N	N/D	ppb	0	3/09	5	Discharge from industrial chemical factories
66. Ethylbenzene	N	N/D	ppb	700	3/09	700	Discharge from petroleum refineries
67. Styrene	N	N/D	ppb	100	3/09	100	Discharge from rubber and plastic factories; leaching from landfills
68. Tetrachloroethylene	N	N/D	ppb	0	3/09	5	Leaching from PVC pipes; discharge from factories and dry cleaners
69. 1,2,4 - Trichlorobenzene	N	N/D	ppb	70	3/09	70	Discharge from textile-finishing factories
70. 1,1,1 - Trichloroethane	N	N/D	ppb	200	02/01	200	Discharge from metal degreasing sites and other factories
71. 1,1,2 -Trichloroethane	N	N/D	ppb	3	3/09	5	Discharge from industrial chemical factories
72. Trichloroethylene	N	N/D	ppb	0	3/09	5	Discharge from metal degreasing sites and other factories
73. TTHM [Total trihalomethanes]	N	64.0	ppb	80	3/09	80	By-product of drinking water chlorination
74. Toluene	N	N/D	ppm	1	3/09	1	Discharge from petroleum factories
75. Vinyl Chloride	N	N/D	ppb	0	3/09	2	Leaching from PVC piping; discharge from plastics factories
76. Xylenes	N	N/D	ppm	10	3/09	10	Discharge from petroleum factories; discharge from chemical factories

Initial Distribution System Evaluation (IDSE): IDSE is an important part of the Stage 2 Disinfection By-Products Rule (DBPR). The IDSE is a one-time study conducted by some water systems, providing disinfection or chlorination, to identify distribution system locations with concentrations of trihalomethanes (THMs) and haloacetic acids (HAAs). Water systems will use results from the IDSE, in conjunction with their Stage 1 DBPR compliance monitoring data, to select monitoring locations for Stage 2 DBPR. Not all water systems were required to perform an IDSE.

Lead Informational Statement (Health effects and ways to reduce exposure)

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. ***The utility named above*** is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components.

When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available form the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Microbiological Contaminants:

(3) Turbidity - Turbidity has no health effects. However, turbidity can interfere 7with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Inorganic Contaminants:

(7) Antimony - Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.

(9) Asbestos - Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.

(10) Barium - Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.

(11) Beryllium - Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.

(12) Cadmium - Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.

(13) Chromium - Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.

(14) Copper - Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.

(16) Fluoride - Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Children may get mottled teeth.

(17) Lead - Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

(18) Mercury (inorganic) - Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.

(20) Nitrite - Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

(21) Selenium - Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.

Volatile Organic Contaminants:

(73) TTHMs [Total Trihalomethanes] - Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

We are proud that your drinking water meets or exceeds all Federal and State requirements. We have learned through our monitoring and testing that some constituents have been detected. The EPA has determined that your water IS SAFE at these levels.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

In our continuing efforts to maintain a safe and dependable water supply, it may be necessary to make improvements in your water system. The costs of these improvements may be reflected in the rate structure. Rate adjustments may be necessary in order to address these improvements.

Thank you for allowing us to continue providing your family with clean, quality water this year. In order to maintain a safe and dependable water supply we sometimes need to make improvements that will benefit all of our customers. These improvements are sometimes reflected as rate structure adjustments. Thank you for understanding.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Please call our office if you have questions. 634-1853

John Lewinski, McCall Water and Sewer

Annual Drinking Water Quality Report

City Of McCall Water Treatment Facility
July, 2012

We are pleased to present to you this year's Annual Quality Water Report. This report is designed to inform you about the quality water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water. Our water source is Payette Lake. There are two intake pump stations, Davis Beach and Legacy Park. Water is pumped to the Water Treatment plant in Spring Mountain Ranch. The City of McCall had no water quality violations in 2012.

If you have any questions about this report or concerning your water utility, please contact **John Lewinski at 634-1853.** We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled meetings. They are held **every other Thursday at City Hall.**

The City Of McCall Water Treatment Facility routinely monitors for constituents in your drinking water according to Federal and State laws. This table shows the results of our monitoring for the period **of January 1, 2011 to December 31, 2011.** We are required to monitor other parameters periodically and they are listed as well and the dates of when they were last tested. All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It is important to remember that the presence of these constituents does not necessarily pose a health risk.

In this table, you will find many terms and abbreviations you may not be familiar with. To help you better understand these terms we have provided the following definitions:

N/A - Not applicable

Non-Detects (ND) - Laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/l)

Parts per billion (ppb) or Micrograms per liter (ug/L)

Parts per trillion (ppt) or Nanograms per liter (nanograms/l)

Parts per quadrillion (ppq) or Picograms per liter (picograms/l)

Picocuries per liter (pCi/L) - Picocuries per liter is a measure of the radioactivity in water.

Millirems per year (mrem/yr) - Measure of radiation absorbed by the body.

Million Fibers per Liter (MFL) - Million fibers per liter is a measure of the presence of asbestos fibers that are longer than 10 micrometers.
Nephelometric Turbidity Unit (NTU) - Nephelometric turbidity unit is a measure of the clarity of water.

Turbidity in excess of 5 NTU is just noticeable to the average person.

Action Level - The concentration of a contaminant, which, if exceeded, triggers treatment, or other requirements, which a water system must follow.

Treatment Technique (TT) - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level - The "Maximum Allowed" (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal - The "Goal"(MCLG) is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
Microbiological Contaminants							
1. Total Coliform Bacteria	N	ND		0	Monthly	Presence of coliform bacteria in 5% of monthly samples	Naturally present in the environment
2. Fecal coliform and *E.coli*	N/A			0		A routine sample and repeat sample are total coliform positive, and one is also fecal coliform or *E. coli* positive	Human and animal fecal waste
3. Turbidity	N	.45	NTU	1.0	Continuous monitoring at the Water Treatment Plant	1.0	Soil runoff
Radioactive Contaminants							
4. A Gross Alpha	N	<1.0	pCi/l		2/03	15	Erosion of natural deposits
B Gross Beta	N	3.1	pCi/l		2/03	50	Erosion of Natural Deposits
C Radium 226	N	<.2	pCi/l		2/03	3	Erosion of Natural Deposits
D Radium 228	N	<1.0	pCi/l		2/03		Erosion of Natural Deposits
Total Measured Radium	N	<.2	pCi/l		2/03	5	Erosion of Natural Deposits
5. Alpha emitters	N	0.0	pCi/1	0		15	Erosion of natural deposits
Inorganic Contaminants. Sodium was also analyzed in 2011. The result was 8.38 mg/l.							

7. Antimony	N	ND	ppb	6	7/10	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
8. Arsenic	N	<.001	ppb	.01	3/11	50	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
9. Asbestos	N	<.083	MFL	7	11/04	7	Decay of asbestos cement water mains; erosion of natural deposits
10. Barium	N	ND	ppm	2	7/10	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits

TEST RESULTS							
Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
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12. Cadmium	N	ND	ppb	5	7/10	5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
13. Chromium	N	2	ppb	100	7/10	100	Discharge from steel and pulp mills; erosion of natural deposits
14. Copper	N	0.531	ppm	1..3	7/11	AL=1..3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
15. Cyanide	N	N\D	ppb	200	3/04	200	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
16. Fluoride	N	ND	ppm	4	7/10	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
17. Lead	N	13	ppb	0	7/11	AL=15	Corrosion of household plumbing systems, erosion of natural deposits
18. Mercury (inorganic)	N	ND	ppb	2	7/10	2	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
19. Nitrate (as Nitrogen)	N	<.30	ppm	10	3/11	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
20. Nitrite (as Nitrogen)	N	ND	ppm	1	3/04	1	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
21. Selenium	N	ND	ppb	50	7/10	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
22. Thallium	N	ND	ppb	0.5	7/10	2	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories
Synthetic Organic Contaminants including Pesticides and Herbicides. 42 SOCs were analyzed in 2001. Several SOCs were analyzed in 2008. All were non-detectable. A complete list is available upon request.							
23. 2,4-D	N	N/D	ppb	70	3/04	70	Runoff from herbicide used on row crops
24. 2,4,5-TP (Silvex)	N	N/D	ppb	50	3/04	50	Residue of banned herbicide
25. Acrylamide	N	N/D		0	02/98	TT	Added to water during sewage/wastewater treatment
26. Alachlor	N	N/D	ppb	0	3/04	2	Runoff from herbicide used on row crops
27. Atrazine	N	N/D	ppb	3	3/04	3	Runoff from herbicide used on row crops
28. Benzo(a)pyrene (PAH)	N	N/D	nanograms/l	0	3/04	200	Leaching from linings of water storage tanks and distribution lines

29. Carbofuran	N	N/D	ppb	40	3/04	40	Leaching of soil fumigant used on rice and alfalfa
30. Chlordane	N	N/D	ppb	0	3/09	2	Residue of banned termiticide

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
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33. Di(2-ethylhexyl) phthalate	N	N/D	ppb	0	3/04	6	Discharge from rubber and chemical factories
34. Dibromochloropropane	N	N/D	nanograms/1	0	02/98	200	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
35. Dinoseb	N	N/D	ppb	7	3/04	7	Runoff from herbicide used on soybeans and vegetables
36. Diquat	N	N/D	ppb	20	3/04	20	Runoff from herbicide use
37. Dioxin [2,3,7,8-TCDD]	N	N/D	picograms/l	0	2/98	30	Emissions from waste incineration and other combustion; discharge from chemical factories
38. Endothall	N	N/D	ppb	100	3/04	100	Runoff from herbicide use
39. Endrin	N	N/D	ppb	2	3/09	2	Residue of banned insecticide
40. Epichlorohydrin	N	N/D		0	02/98	TT	Discharge from industrial chemical factories; an impurity of some water treatment chemicals
41. Ethylene dibromide	N	N/D	nanograms/1	0	02/98	50	Discharge from petroleum refineries
42. Glyphosate	N	N/D	ppb	700	3/04	700	Runoff from herbicide use
43. Heptachlor	N	N/D	nanograms/1	0	3/09	400	Residue of banned termiticide
44. Heptachlor epoxide	N	N/D	nanograms/1	0	3/09	200	Breakdown of heptachlor
45. Hexachlorobenzene	N	N/D	ppb	0	3/04	1	Discharge from metal refineries and agricultural chemical factories
46. Hexachlorocyclo-pentadiene	N	N/D	ppb	50	3/04	50	Discharge from chemical factories
47. Lindane	N	N/D	nanograms/l	200	3/09	200	Runoff/leaching from insecticide used on cattle, lumber, gardens
48. Methoxychlor	N	N/D	ppb	40	3/09	40	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
49. Oxamyl [Vydate]	N	N/D	ppb	200	3/04	200	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
50. PCBs [Polychlorinated biphenyls]	N	N/D	nanograms/1	0	3/09	500	Runoff from landfills; discharge of waste chemicals
51. Pentachlorophenol	N	N/D	ppb	0	3/04	1	Discharge from wood preserving factories
52. Picloram	N	N/D	ppb	500	3/04	500	Herbicide runoff
53. Simazine	N	N/D	ppb	4	3/04	4	Herbicide runoff
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Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
Volatile Organic Contaminants. 26 VOC's were analyzed in 2011. All were non-detectable except total trihalomethanes. Total trihalomethanes were measured in 2011. The reading was 57.4 ppb. The maximum contaminant level is 80 ppb as a rolling average. Total Halocetic Acids in 2011 were .044 mg/l. The mcl for HAA is .060.							
55. Benzene	N	N/D	ppb	0	12/11	5	Discharge from factories; leaching from gas storage tanks and landfills
56. Carbon tetrachloride	N	N/D	ppb	0	12/11	5	Discharge from chemical plants and other industrial activities
57. Chlorobenzene	N	N/D	ppb	100	06/97	100	Discharge from chemical and agricultural chemical factories
58. o-Dichlorobenzene	N	N/D	ppb	600	12/11	600	Discharge from industrial chemical factories
59. p-Dichlorobenzene	N	N/D	ppb	75	12/11	75	Discharge from industrial chemical factories
60. 1,2 - Dichloroethane	N	N/D	ppb	0	12/11	5	Discharge from industrial chemical factories
61. 1,1 - Dichloroethylene	N	N/D	ppb	7	12/11	7	Discharge from industrial chemical factories
62. cis-1,2-ichloroethylene	N	N/D	ppb	70	06/97	70	Discharge from industrial chemical factories
63. trans - 1,2 - Dichloroethylene	N	N/D	ppb	100	06/97	100	Discharge from industrial chemical factories
64. Dichloromethane	N	N/D	ppb	0	12/11	5	Discharge from pharmaceutical and chemical factories
65. 1,2-Dichloropropane	N	N/D	ppb	0	12/11	5	Discharge from industrial chemical factories
66. Ethylbenzene	N	N/D	ppb	700	12/11	700	Discharge from petroleum refineries
67. Styrene	N	N/D	ppb	100	12/11	100	Discharge from rubber and plastic factories; leaching from landfills
68. Tetrachloroethylene	N	N/D	ppb	0	12/11	5	Leaching from PVC pipes; discharge from factories and dry cleaners
69. 1,2,4 - Trichlorobenzene	N	N/D	ppb	70	12/11	70	Discharge from textile-finishing factories
70. 1,1,1 - Trichloroethane	N	N/D	ppb	200	12/11	200	Discharge from metal degreasing sites and other factories
71. 1,1,2 -Trichloroethane	N	N/D	ppb	3	12/11	5	Discharge from industrial chemical factories
72. Trichloroethylene	N	N/D	ppb	0	3/09	5	Discharge from metal degreasing sites and other factories
73. TTHM [Total trihalomethanes]	N	57.4	ppb	80	8/11	80	By-product of drinking water chlorination
74. Toluene	N	N/D	ppm	1	12/11	1	Discharge from petroleum factories
75. Vinyl Chloride	N	N/D	ppb	0	12/11	2	Leaching from PVC piping; discharge from plastics factories
76. Xylenes	N	N/D	ppm	10	12/11	10	Discharge from petroleum factories; discharge from chemical factories

Initial Distribution System Evaluation (IDSE): IDSE is an important part of the Stage 2 Disinfection By-Products Rule (DBPR). The IDSE is a one-time study conducted by some water systems, providing disinfection or chlorination, to identify distribution system locations with concentrations of trihalomethanes (THMs) and haloacetic acids (HAAs). Water systems will use results from the IDSE, in conjunction with their Stage 1 DBPR compliance monitoring data, to select monitoring locations for Stage 2 DBPR. Not all water systems were required to perform an IDSE.

Lead Informational Statement (Health effects and ways to reduce exposure)

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. ***The utility named above*** is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components.

When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available form the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Microbiological Contaminants:

(3) Turbidity - Turbidity has no health effects. However, turbidity can interfere 7with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Inorganic Contaminants:

(7) Antimony - Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.

(9) Asbestos - Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.

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(18) Mercury (inorganic) - Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.

(20) Nitrite - Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

(21) Selenium - Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.

Volatile Organic Contaminants:

(73) TTHMs [Total Trihalomethanes] - Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

We are proud that your drinking water meets or exceeds all Federal and State requirements. We have learned through our monitoring and testing that some constituents have been detected. The EPA has determined that your water IS SAFE at these levels.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

In our continuing efforts to maintain a safe and dependable water supply, it may be necessary to make improvements in your water system. The costs of these improvements may be reflected in the rate structure. Rate adjustments may be necessary in order to address these improvements.

Thank you for allowing us to continue providing your family with clean, quality water this year. In order to maintain a safe and dependable water supply we sometimes need to make improvements that will benefit all of our customers. These improvements are sometimes reflected as rate structure adjustments. Thank you for understanding.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Please call our office if you have questions. 634-1853

John Lewinski, McCall Water and Sewer

Annual Drinking Water Quality Report

City Of McCall Water Treatment Facility
July, 2013

We are pleased to present to you this year's Annual Quality Water Report. This report is designed to inform you about the quality water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water. Our water source is Payette Lake. There are two intake pump stations, Davis Beach and Legacy Park. Water is pumped to the Water Treatment plant in Spring Mountain Ranch. The City of McCall had no water quality violations in 2013.

If you have any questions about this report or concerning your water utility, please contact **John Lewinski at 634-1853.** We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled meetings. They are held **every other Thursday at City Hall.**

The City Of McCall Water Treatment Facility routinely monitors for constituents in your drinking water according to Federal and State laws. This table shows the results of our monitoring for the period **of January 1, 2012 to December 31, 2012.** We are required to monitor other parameters periodically and they are listed as well and the dates of when they were last tested. All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It is important to remember that the presence of these constituents does not necessarily pose a health risk.

In this table, you will find many terms and abbreviations you may not be familiar with. To help you better understand these terms we have provided the following definitions:

N/A - Not applicable

Non-Detects (ND) - Laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/l)

Parts per billion (ppb) or Micrograms per liter (ug/L)

Parts per trillion (ppt) or Nanograms per liter (nanograms/l)

Parts per quadrillion (ppq) or Picograms per liter (picograms/l)

Picocuries per liter (pCi/L) - Picocuries per liter is a measure of the radioactivity in water.

Millirems per year (mrem/yr) - Measure of radiation absorbed by the body.

Million Fibers per Liter (MFL) - Million fibers per liter is a measure of the presence of asbestos fibers that are longer than 10 micrometers.
Nephelometric Turbidity Unit (NTU) - Nephelometric turbidity unit is a measure of the clarity of water.

Turbidity in excess of 5 NTU is just noticeable to the average person.

Action Level - The concentration of a contaminant, which, if exceeded, triggers treatment, or other requirements, which a water system must follow.

Treatment Technique (TT) - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level - The "Maximum Allowed" (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal - The "Goal"(MCLG) is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
Microbiological Contaminants							
1. Total Coliform Bacteria	N	ND		0	Monthly	Presence of coliform bacteria in 5% of monthly samples	Naturally present in the environment
2. Fecal coliform and *E.coli*	N/A			0		A routine sample and repeat sample are total coliform positive, and one is also fecal coliform or *E. coli* positive	Human and animal fecal waste
3. Turbidity	N	.16	NTU	1.0	Continuous monitoring at the Water Treatment Plant	1.0	Soil runoff
Radioactive Contaminants							
4. A Gross Alpha	N	<1.0	pCi/l		2/03	15	Erosion of natural deposits
B Gross Beta	N	3.1	pCi/l		2/03	50	Erosion of Natural Deposits
C Radium 226	N	<.2	pCi/l		2/03	3	Erosion of Natural Deposits
D Radium 228	N	<1.0	pCi/l		2/03		Erosion of Natural Deposits
Total Measured Radium	N	<.2	pCi/l		2/03	5	Erosion of Natural Deposits
5. Alpha emitters	N	0.0	pCi/1	0		15	Erosion of natural deposits

Inorganic Contaminants. Sodium was also analyzed in 2012. The result was 7.30 mg/l.

7. Antimony	N	ND	ppb	6	7/10	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
8. Arsenic	N	<.001	ppb	.01	2/12	50	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
9. Asbestos	N	<.083	MFL	7	11/04	7	Decay of asbestos cement water mains; erosion of natural deposits
10. Barium	N	ND	ppm	2	7/10	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
11. Beryllium	N	ND	ppb	4	7/10	4	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
12. Cadmium	N	ND	ppb	5	7/10	5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
13. Chromium	N	2	ppb	100	7/10	100	Discharge from steel and pulp mills; erosion of natural deposits
14. Copper	N	0.531	ppm	1..3	7/11	AL=1..3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
15. Cyanide	N	N\D	ppb	200	3/04	200	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
16. Fluoride	N	ND	ppm	4	7/10	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
17. Lead	N	13	ppb	0	7/11	AL=15	Corrosion of household plumbing systems, erosion of natural deposits
18. Mercury (inorganic)	N	ND	ppb	2	7/10	2	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
19. Nitrate (as Nitrogen)	N	ND	ppm	10	2/12	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
20. Nitrite (as Nitrogen)	N	ND	ppm	1	3/10	1	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
21. Selenium	N	ND	ppb	50	7/10	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
22. Thallium	N	ND	ppb	0.5	7/10	2	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories

Synthetic Organic Contaminants including Pesticides and Herbicides. 42 SOCs were analyzed in 2001. Several SOCs were analyzed in 2009 and 2012. All were non-detectable. A complete list is available upon request.

23. 2,4-D	N	N/D	ppb	70	3/04	70	Runoff from herbicide used on row crops

24. 2,4,5-TP (Silvex)	N	N/D	ppb	50	3/04	50	Residue of banned herbicide
25. Acrylamide	N	N/D		0	02/98	TT	Added to water during sewage/wastewater treatment
26. Alachlor	N	N/D	ppb	0	3/12	2	Runoff from herbicide used on row crops
27. Atrazine	N	N/D	ppb	3	3/12	3	Runoff from herbicide used on row crops
28. Benzo(a)pyrene (PAH)	N	N/D	nanograms/l	0	3/12	200	Leaching from linings of water storage tanks and distribution lines
29. Carbofuran	N	N/D	ppb	40	3/04	40	Leaching of soil fumigant used on rice and alfalfa
30. Chlordane	N	N/D	ppb	0	3/12	2	Residue of banned termiticide

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
31. Dalapon	N	N/D	ppb	200	3/04	200	Runoff from herbicide used on rights of way
32. Di(2-ethylhexyl) adipate	N	N/D	ppb	400	3/04	400	Discharge from chemical factories
33. Di(2-ethylhexyl) phthalate	N	N/D	ppb	0	3/12	6	Discharge from rubber and chemical factories
34. Dibromochloropropane	N	N/D	nanograms/1	0	02/98	200	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
35. Dinoseb	N	N/D	ppb	7	3/04	7	Runoff from herbicide used on soybeans and vegetables
36. Diquat	N	N/D	ppb	20	3/04	20	Runoff from herbicide use
37. Dioxin [2,3,7,8-TCDD]	N	N/D	picograms/l	0	2/98	30	Emissions from waste incineration and other combustion; discharge from chemical factories
38. Endothall	N	N/D	ppb	100	3/04	100	Runoff from herbicide use
39. Endrin	N	N/D	ppb	2	3/12	2	Residue of banned insecticide
40. Epichlorohydrin	N	N/D		0	02/98	TT	Discharge from industrial chemical factories; an impurity of some water treatment chemicals
41. Ethylene dibromide	N	N/D	nanograms/1	0	02/98	50	Discharge from petroleum refineries
42. Glyphosate	N	N/D	ppb	700	3/04	700	Runoff from herbicide use
43. Heptachlor	N	N/D	nanograms/1	0	3/12	400	Residue of banned termiticide
44. Heptachlor epoxide	N	N/D	nanograms/1	0	3/12	200	Breakdown of heptachlor
45. Hexachlorobenzene	N	N/D	ppb	0	3/12	1	Discharge from metal refineries and agricultural chemical factories
46. Hexachlorocyclo-pentadiene	N	N/D	ppb	50	3/12	50	Discharge from chemical factories
47. Lindane	N	N/D	nanograms/l	200	3/09	200	Runoff/leaching from insecticide used on cattle, lumber, gardens
48. Methoxychlor	N	N/D	ppb	40	3/12	40	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
49. Oxamyl [Vydate]	N	N/D	ppb	200	3/04	200	Runoff/leaching from insecticide used on apples, potatoes and tomatoes

50. PCBs [Polychlorinated biphenyls]	N	N/D	nanograms/1	0	3/12	500	Runoff from landfills; discharge of waste chemicals
51. Pentachlorophenol	N	N/D	ppb	0	3/04	1	Discharge from wood preserving factories
52. Picloram	N	N/D	ppb	500	3/04	500	Herbicide runoff
53. Simazine	N	N/D	ppb	4	3/12	4	Herbicide runoff
54. Toxaphene	N	N/D	ppb	0	3/12	3	Runoff/leaching from insecticide used on cotton and cattle

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City Of McCall Water Treatment Facility
July, 2014

We are pleased to present to you this year's Annual Quality Water Report. This report is designed to inform you about the quality water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water. Our water source is Payette Lake. There are two intake pump stations, Davis Beach and Legacy Park. Water is pumped to the Water Treatment plant in Spring Mountain Ranch. The City of McCall had no water quality violations in 2013.

If you have any questions about this report or concerning your water utility, please contact **John Lewinski at 634-1853.** We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled meetings. They are held **every other Thursday at City Hall.**

The City Of McCall Water Treatment Facility routinely monitors for constituents in your drinking water according to Federal and State laws. This table shows the results of our monitoring for the period **of January 1, 2013 to December 31, 2013.** We are required to monitor other parameters periodically and they are listed as well and the dates of when they were last tested. All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It is important to remember that the presence of these constituents does not necessarily pose a health risk.

In this table, you will find many terms and abbreviations you may not be familiar with. To help you better understand these terms we have provided the following definitions:

N/A - Not applicable

Non-Detects (ND) - Laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/l)

Parts per billion (ppb) or Micrograms per liter (ug/L)

Parts per trillion (ppt) or Nanograms per liter (nanograms/l)

Parts per quadrillion (ppq) or Picograms per liter (picograms/l)

Picocuries per liter (pCi/L) - Picocuries per liter is a measure of the radioactivity in water.

Millirems per year (mrem/yr) - Measure of radiation absorbed by the body.

Million Fibers per Liter (MFL) - Million fibers per liter is a measure of the presence of asbestos fibers that are longer than 10 micrometers.
Nephelometric Turbidity Unit (NTU) - Nephelometric turbidity unit is a measure of the clarity of water.

Turbidity in excess of 5 NTU is just noticeable to the average person.

Action Level - The concentration of a contaminant, which, if exceeded, triggers treatment, or other requirements, which a water system must follow.

Treatment Technique (TT) - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level - The "Maximum Allowed" (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal - The "Goal"(MCLG) is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
Microbiological Contaminants							
1. Total Coliform Bacteria	N	ND		0	Monthly	Presence of coliform bacteria in 5% of monthly samples	Naturally present in the environment
2. Fecal coliform and *E.coli*	N/A			0		A routine sample and repeat sample are total coliform positive, and one is also fecal coliform or *E. coli* positive	Human and animal fecal waste
3. Turbidity	N	.24	NTU	1.0	Continuous monitoring at the Water Treatment Plant	1.0	Soil runoff
Radioactive Contaminants							
4. A Gross Alpha	N	<1.0	pCi/l		2/03	15	Erosion of natural deposits
B Gross Beta	N	3.1	pCi/l		2/03	50	Erosion of Natural Deposits
C Radium 226	N	<.2	pCi/l		2/03	3	Erosion of Natural Deposits
D Radium 228	N	<1.0	pCi/l		2/03		Erosion of Natural Deposits
Total Measured Radium	N	<.2	pCi/l		2/03	5	Erosion of Natural Deposits
5. Alpha emitters	N	0.0	pCi/1	0		15	Erosion of natural deposits

Inorganic Contaminants. Sodium was also analyzed in 2012. The result was 7.28 mg/l.

7. Antimony	N	ND	ppb	6	7/10	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
8. Arsenic	N	ND	ppb	.01	2/13	50	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
9. Asbestos	N	<.2	MFL	7	8/13	7	Decay of asbestos cement water mains; erosion of natural deposits
10. Barium	N	ND	ppm	2	7/10	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
11. Beryllium	N	ND	ppb	4	7/10	4	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
12. Cadmium	N	ND	ppb	5	7/10	5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
13. Chromium	N	2	ppb	100	7/10	100	Discharge from steel and pulp mills; erosion of natural deposits
14. Copper	N	0.531	ppm	1..3	7/11	AL=1..3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
15. Cyanide	N	N\D	ppb	200	3/04	200	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
16. Fluoride	N	ND	ppm	4	7/10	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
17. Lead	N	13	ppb	0	7/11	AL=15	Corrosion of household plumbing systems, erosion of natural deposits
18. Mercury (inorganic)	N	ND	ppb	2	7/10	2	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
19. Nitrate (as Nitrogen)	N	ND	ppm	10	2/13	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
20. Nitrite (as Nitrogen)	N	ND	ppm	1	3/10	1	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
21. Selenium	N	ND	ppb	50	7/10	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
22. Thallium	N	ND	ppb	0.5	7/10	2	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories
Synthetic Organic Contaminants including Pesticides and Herbicides. 42 SOCs were analyzed in 2001. Several SOCs were analyzed in 2009 and 2012. All were non-detectable. A complete list is available upon request.							
23. 2,4-D	N	N/D	ppb	70	3/04	70	Runoff from herbicide used on row crops

24. 2,4,5-TP (Silvex)	N	N/D	ppb	50	3/04	50	Residue of banned herbicide
25. Acrylamide	N	N/D		0	02/98	TT	Added to water during sewage/wastewater treatment
26. Alachlor	N	N/D	ppb	0	3/12	2	Runoff from herbicide used on row crops
27. Atrazine	N	N/D	ppb	3	3/12	3	Runoff from herbicide used on row crops
28. Benzo(a)pyrene (PAH)	N	N/D	nanograms/l	0	3/12	200	Leaching from linings of water storage tanks and distribution lines
29. Carbofuran	N	N/D	ppb	40	3/04	40	Leaching of soil fumigant used on rice and alfalfa
30. Chlordane	N	N/D	ppb	0	3/12	2	Residue of banned termiticide

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31. Dalapon	N	N/D	ppb	200	3/04	200	Runoff from herbicide used on rights of way
32. Di(2-ethylhexyl) adipate	N	N/D	ppb	400	3/04	400	Discharge from chemical factories
33. Di(2-ethylhexyl) phthalate	N	N/D	ppb	0	3/12	6	Discharge from rubber and chemical factories
34. Dibromochloropropane	N	N/D	nanograms/1	0	02/98	200	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
35. Dinoseb	N	N/D	ppb	7	3/04	7	Runoff from herbicide used on soybeans and vegetables
36. Diquat	N	N/D	ppb	20	3/04	20	Runoff from herbicide use
37. Dioxin [2,3,7,8-TCDD]	N	N/D	picograms/l	0	2/98	30	Emissions from waste incineration and other combustion; discharge from chemical factories
38. Endothall	N	N/D	ppb	100	3/04	100	Runoff from herbicide use
39. Endrin	N	N/D	ppb	2	3/12	2	Residue of banned insecticide
40. Epichlorohydrin	N	N/D		0	02/98	TT	Discharge from industrial chemical factories; an impurity of some water treatment chemicals
41. Ethylene dibromide	N	N/D	nanograms/1	0	02/98	50	Discharge from petroleum refineries
42. Glyphosate	N	N/D	ppb	700	3/04	700	Runoff from herbicide use
43. Heptachlor	N	N/D	nanograms/1	0	3/12	400	Residue of banned termiticide
44. Heptachlor epoxide	N	N/D	nanograms/1	0	3/12	200	Breakdown of heptachlor
45. Hexachlorobenzene	N	N/D	ppb	0	3/12	1	Discharge from metal refineries and agricultural chemical factories
46. Hexachlorocyclo-pentadiene	N	N/D	ppb	50	3/12	50	Discharge from chemical factories
47. Lindane	N	N/D	nanograms/l	200	3/09	200	Runoff/leaching from insecticide used on cattle, lumber, gardens
48. Methoxychlor	N	N/D	ppb	40	3/12	40	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
49. Oxamyl [Vydate]	N	N/D	ppb	200	3/04	200	Runoff/leaching from insecticide used on apples, potatoes and tomatoes

50. PCBs [Polychlorinated biphenyls]	N	N/D	nanograms/1	0	3/12	500	Runoff from landfills; discharge of waste chemicals
51. Pentachlorophenol	N	N/D	ppb	0	3/04	1	Discharge from wood preserving factories
52. Picloram	N	N/D	ppb	500	3/04	500	Herbicide runoff
53. Simazine	N	N/D	ppb	4	3/12	4	Herbicide runoff
54. Toxaphene	N	N/D	ppb	0	3/12	3	Runoff/leaching from insecticide used on cotton and cattle

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
Volatile Organic Contaminants. 26 VOC's were analyzed in 2013. All were non-detectable except total trihalomethanes. Total trihalomethanes were measured in 2012. The reading was 77.7 ppb. The maximum contaminant level is 80 ppb as a rolling average. Total Halocetic Acids in 2013 were .054 mg/l. The mcl for HAA is .060.							
55. Benzene	N	N/D	ppb	0	8/13	5	Discharge from factories; leaching from gas storage tanks and landfills
56. Carbon tetrachloride	N	N/D	ppb	0	8/13	5	Discharge from chemical plants and other industrial activities
57. Chlorobenzene	N	N/D	ppb	100	8/13	100	Discharge from chemical and agricultural chemical factories
58. o-Dichlorobenzene	N	N/D	ppb	600	8/13	600	Discharge from industrial chemical factories
59. p-Dichlorobenzene	N	N/D	ppb	75	8/13	75	Discharge from industrial chemical factories
60. 1,2 - Dichloroethane	N	N/D	ppb	0	8/13	5	Discharge from industrial chemical factories
61. 1,1 - Dichloroethylene	N	N/D	ppb	7	3/12	7	Discharge from industrial chemical factories
62. cis-1,2-ichloroethylene	N	N/D	ppb	70	06/97	70	Discharge from industrial chemical factories
63. trans - 1,2 - Dichloroethylene	N	N/D	ppb	100	3/12	100	Discharge from industrial chemical factories
64. Dichloromethane	N	N/D	ppb	0	3/12	5	Discharge from pharmaceutical and chemical factories
65. 1,2-Dichloropropane	N	N/D	ppb	0	8/13	5	Discharge from industrial chemical factories
66. Ethylbenzene	N	N/D	ppb	700	8/13	700	Discharge from petroleum refineries
67. Styrene	N	N/D	ppb	100	8/13	100	Discharge from rubber and plastic factories; leaching from landfills
68. Tetrachloroethylene	N	N/D	ppb	0	8/13	5	Leaching from PVC pipes; discharge from factories and dry cleaners
69. 1,2,4 - Trichlorobenzene	N	N/D	ppb	70	8/13	70	Discharge from textile-finishing factories
70. 1,1,1 - Trichloroethane	N	N/D	ppb	200	8/13	200	Discharge from metal degreasing sites and other factories
71. 1,1,2 -Trichloroethane	N	N/D	ppb	3	8/13	5	Discharge from industrial chemical factories
72. Trichloroethylene	N	N/D	ppb	0	3/12	5	Discharge from metal degreasing sites and other factories
73. TTHM [Total trihalomethanes]	N	55.0	ppb	80	3/12	80	By-product of drinking water chlorination
74. Toluene	N	N/D	ppm	1	3/12	1	Discharge from petroleum factories
75. Vinyl Chloride	N	N/D	ppb	0	8/13	2	Leaching from PVC piping; discharge from plastics factories
76. Xylenes	N	N/D	ppm	10	8/13	10	Discharge from petroleum factories; discharge from chemical factories

Initial Distribution System Evaluation (IDSE): IDSE is an important part of the Stage 2 Disinfection By-Products Rule (DBPR). The IDSE is a one-time study conducted by some water systems, providing disinfection or chlorination, to identify distribution system locations with concentrations of trihalomethanes (THMs) and haloacetic acids (HAAs). Water systems will use results from the IDSE, in conjunction with their Stage 1 DBPR compliance monitoring data, to select monitoring locations for Stage 2 DBPR. Not all water systems were required to perform an IDSE.

Lead Informational Statement (Health effects and ways to reduce exposure)

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. ***The utility named above*** is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components.

When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available form the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Microbiological Contaminants:

(3) Turbidity - Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Inorganic Contaminants:

(7) Antimony - Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.

(9) Asbestos - Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.

(10) Barium - Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.

(11) Beryllium - Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.

(12) Cadmium - Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.

(13) Chromium - Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.

(14) Copper - Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.

(16) Fluoride - Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Children may get mottled teeth.

(17) Lead - Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

(18) Mercury (inorganic) - Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.

(20) Nitrite - Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

(21) Selenium - Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.

Volatile Organic Contaminants:

(73) TTHMs [Total Trihalomethanes] - Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

We are proud that your drinking water meets or exceeds all Federal and State requirements. We have learned through our monitoring and testing that some constituents have been detected. The EPA has determined that your water IS SAFE at these levels.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

In our continuing efforts to maintain a safe and dependable water supply, it may be necessary to make improvements in your water system. The costs of these improvements may be reflected in the rate structure. Rate adjustments may be necessary in order to address these improvements.

Thank you for allowing us to continue providing your family with clean, quality water this year. In order to maintain a safe and dependable water supply we sometimes need to make improvements that will benefit all of our customers. These improvements are sometimes reflected as rate structure adjustments. Thank you for understanding.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Please call our office if you have questions. 634-1853

John Lewinski, McCall Water and Sewer

Annual Drinking Water Quality Report

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July, 2015

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35. Dinoseb	N	N/D	ppb	7	3/04	7	Runoff from herbicide used on soybeans and vegetables
36. Diquat	N	N/D	ppb	20	3/04	20	Runoff from herbicide use
37. Dioxin [2,3,7,8-TCDD]	N	N/D	picograms/l	0	2/98	30	Emissions from waste incineration and other combustion; discharge from chemical factories
38. Endothall	N	N/D	ppb	100	3/04	100	Runoff from herbicide use
39. Endrin	N	N/D	ppb	2	3/12	2	Residue of banned insecticide
40. Epichlorohydrin	N	N/D		0	02/98	TT	Discharge from industrial chemical factories; an impurity of some water treatment chemicals
41. Ethylene dibromide	N	N/D	nanograms/1	0	02/98	50	Discharge from petroleum refineries
42. Glyphosate	N	N/D	ppb	700	3/04	700	Runoff from herbicide use
43. Heptachlor	N	N/D	nanograms/1	0	3/12	400	Residue of banned termiticide
44. Heptachlor epoxide	N	N/D	nanograms/1	0	3/12	200	Breakdown of heptachlor
45. Hexachlorobenzene	N	N/D	ppb	0	3/12	1	Discharge from metal refineries and agricultural chemical factories
46. Hexachlorocyclo-pentadiene	N	N/D	ppb	50	3/12	50	Discharge from chemical factories
47. Lindane	N	N/D	nanograms/l	200	3/09	200	Runoff/leaching from insecticide used on cattle, lumber, gardens
48. Methoxychlor	N	N/D	ppb	40	3/12	40	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
49. Oxamyl [Vydate]	N	N/D	ppb	200	3/04	200	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
50. PCBs [Polychlorinated biphenyls]	N	N/D	nanograms/1	0	3/12	500	Runoff from landfills; discharge of waste chemicals

51. Pentachlorophenol	N	N/D	ppb	0	3/04	1	Discharge from wood preserving factories
52. Picloram	N	N/D	ppb	500	3/04	500	Herbicide runoff
53. Simazine	N	N/D	ppb	4	3/12	4	Herbicide runoff
54. Toxaphene	N	N/D	ppb	0	3/12	3	Runoff/leaching from insecticide used on cotton and cattle

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
Volatile Organic Contaminants. 26 VOC's were analyzed in 2013. All were non-detectable except total trihalomethanes. Total trihalomethanes were measured in 2014. The reading was 77.7 ppb. The maximum contaminant level is 80 ppb as a rolling average. Total Halocetic Acids in 2014 were .036 mg/l. The mcl for HAA is .060.							
55. Benzene	N	N/D	ppb	0	2/14	5	Discharge from factories; leaching from gas storage tanks and landfills
56. Carbon tetrachloride	N	N/D	ppb	0	2/14	5	Discharge from chemical plants and other industrial activities
57. Chlorobenzene	N	N/D	ppb	100	2/14	100	Discharge from chemical and agricultural chemical factories
58. o-Dichlorobenzene	N	N/D	ppb	600	2/14	600	Discharge from industrial chemical factories
59. p-Dichlorobenzene	N	N/D	ppb	75	2/14	75	Discharge from industrial chemical factories
60. 1,2 - Dichloroethane	N	N/D	ppb	0	2/14	5	Discharge from industrial chemical factories
61. 1,1 - Dichloroethylene	N	N/D	ppb	7	3/12	7	Discharge from industrial chemical factories
62. cis-1,2-ichloroethylene	N	N/D	ppb	70	06/97	70	Discharge from industrial chemical factories
63. trans - 1,2 - Dichloroethylene	N	N/D	ppb	100	3/12	100	Discharge from industrial chemical factories
64. Dichloromethane	N	N/D	ppb	0	3/12	5	Discharge from pharmaceutical and chemical factories
65. 1,2-Dichloropropane	N	N/D	ppb	0	8/13	5	Discharge from industrial chemical factories
66. Ethylbenzene	N	N/D	ppb	700	8/13	700	Discharge from petroleum refineries
67. Styrene	N	N/D	ppb	100	8/13	100	Discharge from rubber and plastic factories; leaching from landfills
68. Tetrachloroethylene	N	N/D	ppb	0	8/13	5	Leaching from PVC pipes; discharge from factories and dry cleaners
69. 1,2,4 - Trichlorobenzene	N	N/D	ppb	70	8/13	70	Discharge from textile-finishing factories
70. 1,1,1 - Trichloroethane	N	N/D	ppb	200	8/13	200	Discharge from metal degreasing sites and other factories
71. 1,1,2 -Trichloroethane	N	N/D	ppb	3	8/13	5	Discharge from industrial chemical factories
72. Trichloroethylene	N	N/D	ppb	0	3/12	5	Discharge from metal degreasing sites and other factories
73. TTHM [Total trihalomethanes]	N	55.0	ppb	80	3/12	80	By-product of drinking water chlorination
74. Toluene	N	N/D	ppm	1	3/12	1	Discharge from petroleum factories
75. Vinyl Chloride	N	N/D	ppb	0	8/13	2	Leaching from PVC piping; discharge from plastics factories
76. Xylenes	N	N/D	ppm	10	8/13	10	Discharge from petroleum factories; discharge from chemical factories

Initial Distribution System Evaluation (IDSE): IDSE is an important part of the Stage 2 Disinfection By-Products Rule (DBPR). The IDSE is a one-time study conducted by some water systems, providing disinfection or chlorination, to identify distribution system locations with concentrations of trihalomethanes (THMs) and haloacetic acids (HAAs). Water systems will use results from the IDSE, in conjunction with their Stage 1 DBPR compliance monitoring data, to select monitoring locations for Stage 2 DBPR. Not all water systems were required to perform an IDSE.

Lead Informational Statement (Health effects and ways to reduce exposure)

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. ***The utility named above*** is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components.

When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available form the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Microbiological Contaminants:

(3) Turbidity - Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Inorganic Contaminants:

(7) Antimony - Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.

(9) Asbestos - Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.

(10) Barium - Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.

(11) Beryllium - Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.

(12) Cadmium - Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.

(13) Chromium - Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.

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(16) Fluoride - Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Children may get mottled teeth.

(17) Lead - Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

(18) Mercury (inorganic) - Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.

(20) Nitrite - Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

(21) Selenium - Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.

Volatile Organic Contaminants:

(73) TTHMs [Total Trihalomethanes] - Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

We are proud that your drinking water meets or exceeds all Federal and State requirements. We have learned through our monitoring and testing that some constituents have been detected. The EPA has determined that your water IS SAFE at these levels.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

In our continuing efforts to maintain a safe and dependable water supply, it may be necessary to make improvements in your water system. The costs of these improvements may be reflected in the rate structure. Rate adjustments may be necessary in order to address these improvements.

Thank you for allowing us to continue providing your family with clean, quality water this year. In order to maintain a safe and dependable water supply we sometimes need to make improvements that will benefit all of our customers. These improvements are sometimes reflected as rate structure adjustments. Thank you for understanding.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Please call our office if you have questions. 634-1853

Matthew Dellwo, McCall Water and Sewer

Annual Drinking Water Quality Report

City Of McCall Water Treatment Facility
July, 2016

We are pleased to present to you this year's Annual Quality Water Report. This report is designed to inform you about the quality water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water. Our water source is Payette Lake. There are two intake pump stations, Davis Beach and Legacy Park. Water is pumped to the Water Treatment plant in Spring Mountain Ranch. The City of McCall had no water quality violations in 2015.

If you have any questions about this report or concerning your water utility, please contact **Matthew Dellwo at 634-1853.** We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled meetings. They are held **every other Thursday at City Hall.**

The City Of McCall Water Treatment Facility routinely monitors for constituents in your drinking water according to Federal and State laws. This table shows the results of our monitoring for the period **of January 1, 2015 to December 31, 2015.** We are required to monitor other parameters periodically and they are listed as well and the dates of when they were last tested. All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It is important to remember that the presence of these constituents does not necessarily pose a health risk.

In this table, you will find many terms and abbreviations you may not be familiar with. To help you better understand these terms we have provided the following definitions:

N/A - Not applicable

Non-Detects (ND) - Laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/l)

Parts per billion (ppb) or Micrograms per liter (ug/L)

Parts per trillion (ppt) or Nanograms per liter (nanograms/l)

Parts per quadrillion (ppq) or Picograms per liter (picograms/l)

Picocuries per liter (pCi/L) - Picocuries per liter is a measure of the radioactivity in water.

Millirems per year (mrem/yr) - Measure of radiation absorbed by the body.

Million Fibers per Liter (MFL) - Million fibers per liter is a measure of the presence of asbestos fibers that are longer than 10 micrometers.
Nephelometric Turbidity Unit (NTU) - Nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Action Level - The concentration of a contaminant, which, if exceeded, triggers treatment, or other requirements, which a water system must follow.

Treatment Technique (TT) - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level - The "Maximum Allowed" (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal - The "Goal"(MCLG) is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
Microbiological Contaminants							
1. Total Coliform Bacteria	N	ND		0	Monthly	Presence of coliform bacteria in 5% of monthly samples	Naturally present in the environment
2. Fecal coliform and *E.coli*	N/A			0	Monthly	A routine sample and repeat sample are total coliform positive, and one is also fecal coliform or *E. coli* positive	Human and animal fecal waste
3. Turbidity	N	.24	NTU	1.0	Continuous monitoring at the Water Treatment Plant	1.0	Soil runoff
Radioactive Contaminants							
4. A Gross Alpha	N	<1.0	pCi/l		2/03	15	Erosion of natural deposits
B Gross Beta	N	3.1	pCi/l		2/03	50	Erosion of Natural Deposits
C Radium 226	N	<.2	pCi/l		2/03	3	Erosion of Natural Deposits
D Radium 228	N	<1.0	pCi/l		2/03		Erosion of Natural Deposits
Total Measured Radium	N	<.2	pCi/l		2/03	5	Erosion of Natural Deposits
5. Alpha emitters	N	0.0	pCi/l	0		15	Erosion of natural deposits
6. Sodium	N	7.28	Mg/l		3/12		Erosion of natural deposits
7. Antimony	N	ND	ppb	6	7/10	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder

8. Arsenic	N	ND	ppb	.01	2/13	50	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
9. Asbestos	N	<.2	MFL	7	8/13	7	Decay of asbestos cement water mains; erosion of natural deposits
10. Barium	N	ND	ppm	2	7/10	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
11. Beryllium	N	ND	ppb	4	7/10	4	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
12. Cadmium	N	ND	ppb	5	7/10	5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
13. Chromium	N	2	ppb	100	7/10	100	Discharge from steel and pulp mills; erosion of natural deposits
14. Copper	N	0.531	ppm	1..3	7/11	AL=1..3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
15. Cyanide	N	N\D	ppb	200	3/04	200	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
16. Fluoride	N	ND	ppm	4	7/10	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
17. Lead	N	13	ppb	0	7/11	AL=15	Corrosion of household plumbing systems, erosion of natural deposits
18. Mercury (inorganic)	N	ND	ppb	2	7/10	2	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
19. Nitrate (as Nitrogen)	N	ND	ppm	10	2/13	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
20. Nitrite (as Nitrogen)	N	ND	ppm	1	3/10	1	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
21. Selenium	N	ND	ppb	50	7/10	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
22. Thallium	N	ND	ppb	0.5	7/10	2	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories
23. 2,4-D	N	N/D	ppb	70	3/04	70	Runoff from herbicide used on row crops
24. 2,4,5-TP (Silvex)	N	N/D	ppb	50	3/04	50	Residue of banned herbicide
25. Acrylamide	N	N/D		0	02/98	TT	Added to water during sewage/wastewater treatment
26. Alachlor	N	N/D	ppb	0	3/12	2	Runoff from herbicide used on row crops

27. Atrazine	N	N/D	ppb	3	3/12	3	Runoff from herbicide used on row crops
28. Benzo(a)pyrene (PAH)	N	N/D	nanograms/l	0	3/12	200	Leaching from linings of water storage tanks and distribution lines
29. Carbofuran	N	N/D	ppb	40	3/04	40	Leaching of soil fumigant used on rice and alfalfa
30. Chlordane	N	N/D	ppb	0	3/12	2	Residue of banned termiticide

TEST RESULTS

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31. Dalapon	N	N/D	ppb	200	3/04	200	Runoff from herbicide used on rights of way
32. Di(2-ethylhexyl) adipate	N	N/D	ppb	400	3/04	400	Discharge from chemical factories
33. Di(2-ethylhexyl) phthalate	N	N/D	ppb	0	3/12	6	Discharge from rubber and chemical factories
34. Dibromochloropropane	N	N/D	nanograms/l	0	02/98	200	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
35. Dinoseb	N	N/D	ppb	7	3/04	7	Runoff from herbicide used on soybeans and vegetables
36. Diquat	N	N/D	ppb	20	3/04	20	Runoff from herbicide use
37. Dioxin [2,3,7,8-TCDD]	N	N/D	picograms/l	0	2/98	30	Emissions from waste incineration and other combustion; discharge from chemical factories
38. Endothall	N	N/D	ppb	100	3/04	100	Runoff from herbicide use
39. Endrin	N	N/D	ppb	2	3/12	2	Residue of banned insecticide
40. Epichlorohydrin	N	N/D		0	02/98	TT	Discharge from industrial chemical factories; an impurity of some water treatment chemicals
41. Ethylene dibromide	N	N/D	nanograms/l	0	02/98	50	Discharge from petroleum refineries
42. Glyphosate	N	N/D	ppb	700	3/04	700	Runoff from herbicide use
43. Heptachlor	N	N/D	nanograms/l	0	3/12	400	Residue of banned termiticide
44. Heptachlor epoxide	N	N/D	nanograms/l	0	3/12	200	Breakdown of heptachlor
45. Hexachlorobenzene	N	N/D	ppb	0	3/12	1	Discharge from metal refineries and agricultural chemical factories
46. Hexachlorocyclo-pentadiene	N	N/D	ppb	50	3/12	50	Discharge from chemical factories
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49. Oxamyl [Vydate]	N	N/D	ppb	200	3/04	200	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
50. PCBs [Polychlorinated biphenyls]	N	N/D	nanograms/l	0	3/12	500	Runoff from landfills; discharge of waste chemicals
51. Pentachlorophenol	N	N/D	ppb	0	3/04	1	Discharge from wood preserving factories
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68. Tetrachloroethylene	N	N/D	ppb	0	8/13	5	Leaching from PVC pipes; discharge from factories and dry cleaners
69. 1,2,4 - Trichlorobenzene	N	N/D	ppb	70	8/15	70	Discharge from textile-finishing factories
70. 1,1,1 - Trichloroethane	N	N/D	ppb	200	8/15	200	Discharge from metal degreasing sites and other factories
71. 1,1,2 -Trichloroethane	N	N/D	ppb	3	8/15	5	Discharge from industrial chemical factories
72. Trichloroethylene	N	N/D	ppb	0	3/12	5	Discharge from metal degreasing sites and other factories
73. TTHM [Total trihalomethanes]	N	55.0	ppb	80	3/12	80	By-product of drinking water chlorination
74. Toluene	N	N/D	ppm	1	3/12	1	Discharge from petroleum factories
75. Vinyl Chloride	N	N/D	ppb	0	8/13	2	Leaching from PVC piping; discharge from plastics factories
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(10) Barium - Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.

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(18) Mercury (inorganic) - Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.

(20) Nitrite - Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

(21) Selenium - Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.

Volatile Organic Contaminants:

(73) TTHMs [Total Trihalomethanes] - Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

We are proud that your drinking water meets or exceeds all Federal and State requirements. We have learned through our monitoring and testing that some constituents have been detected. The EPA has determined that

your water IS SAFE at these levels.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

In our continuing efforts to maintain a safe and dependable water supply, it may be necessary to make improvements in your water system. The costs of these improvements may be reflected in the rate structure. Rate adjustments may be necessary in order to address these improvements.

Thank you for allowing us to continue providing your family with clean, quality water this year. In order to maintain a safe and dependable water supply we sometimes need to make improvements that will benefit all of our customers. These improvements are sometimes reflected as rate structure adjustments. Thank you for understanding.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Please call our office if you have questions. 634-1853

Matthew Dellwo, McCall Water and Sewer

Annual Drinking Water Quality Report

City Of McCall Water Treatment Facility
July, 2018

We are pleased to present to you this year's Annual Quality Water Report. This report is designed to inform you about the quality water and services we deliver to you every day. Our constant goal is to provide you with a safe and dependable supply of drinking water. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. And we are committed to ensuring the quality of your water. Our water source is Payette Lake. There are two intake pump stations, Davis Beach and Legacy Park. Water is pumped to the Water Treatment plant located on Bitterroot Drive. The City of McCall had no water quality violations in 2016.

If you have any questions about this report or concerning your water utility, please contact **Matthew Dellwo at 634-1853.** We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled meetings. They are held **every other Thursday at City Hall.**

The City Of McCall Water Treatment Facility routinely monitors for constituents in your drinking water according to Federal and State laws. This table shows the results of our monitoring for the period **of January 1, 2017 to December 31, 2017.** We are required to monitor other parameters periodically and they are listed as well and the dates of when they were last tested. All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some constituents. It is important to remember that the presence of these constituents does not necessarily pose a health risk.

In this table, you will find many terms and abbreviations you may not be familiar with. To help you better understand these terms we have provided the following definitions:

N/A - Not applicable

Non-Detects (ND) - Laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/l)

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Parts per trillion (ppt) or Nanograms per liter (nanograms/l)

Parts per quadrillion (ppq) or Picograms per liter (picograms/l)

Picocuries per liter (pCi/L) - Picocuries per liter is a measure of the radioactivity in water.

Millirems per year (mrem/yr) - Measure of radiation absorbed by the body.

Million Fibers per Liter (MFL) - Million fibers per liter is a measure of the presence of asbestos fibers that are longer than 10 micrometers.
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Maximum Contaminant Level - The "Maximum Allowed" (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal - The "Goal"(MCLG) is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
Microbiological Contaminants							
1. Total Coliform Bacteria	N	ND		0	Monthly	Presence of coliform bacteria in 5% of monthly samples	Naturally present in the environment
2. Fecal coliform and *E.coli*	N/A			0	Monthly	A routine sample and repeat sample are total coliform positive, and one is also fecal coliform or *E. coli* positive	Human and animal fecal waste
3. Turbidity	N	.24	NTU	1.0	Continuous monitoring at the Water Treatment Plant	1.0	Soil runoff
Radioactive Contaminants							
4. A Gross Alpha	N	<1.0	pCi/l		11/16	15	Erosion of natural deposits
B Gross Beta	N	3.1	pCi/l		2/03	50	Erosion of Natural Deposits
C Radium 226	N	<.2	pCi/l		11/16	3	Erosion of Natural Deposits
D Radium 228	N	<1.0	pCi/l		11/16		Erosion of Natural Deposits
Total Measured Radium	N	<.2	pCi/l		2/03	5	Erosion of Natural Deposits
5. Alpha emitters	N	0.0	pCi/l	0		15	Erosion of natural deposits
6. Sodium	N	7.28	Mg/l		3/12		Erosion of natural deposits
7. Antimony	N	ND	ppb	6	7/10	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder

8. Arsenic	N	ND	ppb	.01	2/13	50	Erosion of natural deposits; runoff from orchards; runoff from glass and electronics production wastes
9. Asbestos	N	<.2	MFL	7	8/13	7	Decay of asbestos cement water mains; erosion of natural deposits
10. Barium	N	ND	ppm	2	7/10	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
11. Beryllium	N	ND	ppb	4	7/10	4	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
12. Cadmium	N	ND	ppb	5	7/10	5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
13. Chromium	N	2	ppb	100	7/10	100	Discharge from steel and pulp mills; erosion of natural deposits
14. Copper	N	0.510	ppm	1..3	9/17	AL=1..3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
15. Cyanide	N	N\D	ppb	200	3/04	200	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
16. Fluoride	N	ND	ppm	4	4/16	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
17. Lead	N	0.00	ppb	0	9/17	AL=15	Corrosion of household plumbing systems, erosion of natural deposits
18. Mercury (inorganic)	N	ND	ppb	2	7/10	2	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills; runoff from cropland
19. Nitrate (as Nitrogen)	N	ND	ppm	10	11/16	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
20. Nitrite (as Nitrogen)	N	ND	ppm	1	3/10	1	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
21. Selenium	N	ND	ppb	50	7/10	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines
22. Thallium	N	ND	ppb	0.5	7/10	2	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories
23. 2,4-D	N	N/D	ppb	70	3/04	70	Runoff from herbicide used on row crops
24. 2,4,5-TP (Silvex)	N	N/D	ppb	50	3/04	50	Residue of banned herbicide
25. Acrylamide	N	N/D		0	02/98	TT	Added to water during sewage/wastewater treatment
26. Alachlor	N	N/D	ppb	0	3/12	2	Runoff from herbicide used on row crops

27. Atrazine	N	N/D	ppb	3	3/12	3	Runoff from herbicide used on row crops
28. Benzo(a)pyrene (PAH)	N	N/D	nanograms/l	0	3/12	200	Leaching from linings of water storage tanks and distribution lines
29. Carbofuran	N	N/D	ppb	40	3/04	40	Leaching of soil fumigant used on rice and alfalfa
30. Chlordane	N	N/D	ppb	0	3/12	2	Residue of banned termiticide

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
31. Dalapon	N	N/D	ppb	200	3/04	200	Runoff from herbicide used on rights of way
32. Di(2-ethylhexyl) adipate	N	N/D	ppb	400	3/04	400	Discharge from chemical factories
33. Di(2-ethylhexyl) phthalate	N	N/D	ppb	0	3/12	6	Discharge from rubber and chemical factories
34. Dibromochloropropane	N	N/D	nanograms/l	0	02/98	200	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
35. Dinoseb	N	N/D	ppb	7	3/04	7	Runoff from herbicide used on soybeans and vegetables
36. Diquat	N	N/D	ppb	20	3/04	20	Runoff from herbicide use
37. Dioxin [2,3,7,8-TCDD]	N	N/D	picograms/l	0	2/98	30	Emissions from waste incineration and other combustion; discharge from chemical factories
38. Endothall	N	N/D	ppb	100	3/04	100	Runoff from herbicide use
39. Endrin	N	N/D	ppb	2	3/12	2	Residue of banned insecticide
40. Epichlorohydrin	N	N/D		0	02/98	TT	Discharge from industrial chemical factories; an impurity of some water treatment chemicals
41. Ethylene dibromide	N	N/D	nanograms/l	0	02/98	50	Discharge from petroleum refineries
42. Glyphosate	N	N/D	ppb	700	3/04	700	Runoff from herbicide use
43. Heptachlor	N	N/D	nanograms/l	0	3/12	400	Residue of banned termiticide
44. Heptachlor epoxide	N	N/D	nanograms/l	0	3/12	200	Breakdown of heptachlor
45. Hexachlorobenzene	N	N/D	ppb	0	3/12	1	Discharge from metal refineries and agricultural chemical factories
46. Hexachlorocyclo-pentadiene	N	N/D	ppb	50	3/12	50	Discharge from chemical factories
47. Lindane	N	N/D	nanograms/l	200	3/09	200	Runoff/leaching from insecticide used on cattle, lumber, gardens
48. Methoxychlor	N	N/D	ppb	40	3/12	40	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
49. Oxamyl [Vydate]	N	N/D	ppb	200	3/04	200	Runoff/leaching from insecticide used on apples, potatoes and tomatoes
50. PCBs [Polychlorinated biphenyls]	N	N/D	nanograms/l	0	3/12	500	Runoff from landfills; discharge of waste chemicals
51. Pentachlorophenol	N	N/D	ppb	0	3/04	1	Discharge from wood preserving factories
52. Picloram	N	N/D	ppb	500	3/04	500	Herbicide runoff

53. Simazine	N	N/D	ppb	4	3/12	4	Herbicide runoff
54. Toxaphene	N	N/D	ppb	0	3/12	3	Runoff/leaching from insecticide used on cotton and cattle

TEST RESULTS

Contaminant	Violation Y/N	Level Detected	Unit Measurement	MCLG	Date Tested	MCL	Likely Source of Contamination
Volatile Organic Contaminants. 26 VOC's were analyzed in 2013. All were non-detect except total trihalomethanes. Total trihalomethanes were measured in 2015. The reading was 34 ppb. The maximum contaminant level is 80 ppb as a rolling average. Total Halocetic Acids in 2015 were .024 mg/l. The mcl for HAA is .060.							
55. Benzene	N	N/D	ppb	0	12/17	5	Discharge from factories; leaching from gas storage tanks and landfills
56. Carbon tetrachloride	N	N/D	ppb	0	12/17	5	Discharge from chemical plants and other industrial activities
57. Chlorobenzene	N	N/D	ppb	100	12/17	100	Discharge from chemical and agricultural chemical factories
58. o-Dichlorobenzene	N	N/D	ppb	600	12/17	600	Discharge from industrial chemical factories
59. p-Dichlorobenzene	N	N/D	ppb	75	12/17	75	Discharge from industrial chemical factories
60. 1,2 - Dichloroethane	N	N/D	ppb	0	12/17	5	Discharge from industrial chemical factories
61. 1,1 - Dichloroethylene	N	N/D	ppb	7	12/17	7	Discharge from industrial chemical factories
62. cis-1,2-ichloroethylene	N	N/D	ppb	70	06/97	70	Discharge from industrial chemical factories
63. trans - 1,2 - Dichloroethylene	N	N/D	ppb	100	12/17	100	Discharge from industrial chemical factories
64. Dichloromethane	N	N/D	ppb	0	12/17	5	Discharge from pharmaceutical and chemical factories
65. 1,2-Dichloropropane	N	N/D	ppb	0	12/17	5	Discharge from industrial chemical factories
66. Ethylbenzene	N	N/D	ppb	700	12/17	700	Discharge from petroleum refineries
67. Styrene	N	N/D	ppb	100	12/17	100	Discharge from rubber and plastic factories; leaching from landfills
68. Tetrachloroethylene	N	N/D	ppb	0	12/17	5	Leaching from PVC pipes; discharge from factories and dry cleaners
69. 1,2,4 - Trichlorobenzene	N	N/D	ppb	0	12/17	70	Discharge from textile-finishing factories
70. 1,1,1 - Trichloroethane	N	N/D	ppb	200	12/17	200	Discharge from metal degreasing sites and other factories
71. 1,1,2 -Trichloroethane	N	N/D	ppb	3	12/17	5	Discharge from industrial chemical factories
72. Trichloroethylene	N	N/D	ppb	0	12/17	5	Discharge from metal degreasing sites and other factories
73. TTHM [Total trihalomethanes]	N	30.15	ppb	80	2017	80	By-product of drinking water chlorination
74. Toluene	N	N/D	ppm	1	12/17	1	Discharge from petroleum factories
75. Vinyl Chloride	N	N/D	ppb	0	12/17	2	Leaching from PVC piping; discharge from plastics factories
76. Xylenes	N	N/D	ppm	10	12/17	10	Discharge from petroleum factories; discharge from chemical factories

Initial Distribution System Evaluation (IDSE): IDSE is an important part of the Stage 2 Disinfection By-Products Rule (DBPR). The IDSE is a one-time study conducted by some water systems, providing disinfection or chlorination, to identify distribution system locations with concentrations of trihalomethanes (THMs) and haloacetic acids (HAAs). Water systems

will use results from the IDSE, in conjunction with their Stage 1 DBPR compliance monitoring data, to select monitoring locations for Stage 2 DBPR. Not all water systems were required to perform an IDSE.

Lead Informational Statement (Health effects and ways to reduce exposure)

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. ***The utility named above*** is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components.

When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available form the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Microbiological Contaminants:

(3) Turbidity - Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

Inorganic Contaminants:

(7) Antimony - Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.

(9) Asbestos - Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.

(10) Barium - Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.

(11) Beryllium - Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.

(12) Cadmium - Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.

(13) Chromium - Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.

(14) Copper - Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.

(16) Fluoride - Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Children may get mottled teeth.

(17) Lead - Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

(18) Mercury (inorganic) - Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.

(20) Nitrite - Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

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Volatile Organic Contaminants:

(73) TTHMs [Total Trihalomethanes] - Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

During the time from 4/01-4/30-2017 and 5/01-5/31-2017 we received two violations. These violations were monitoring violations, due to the SCADA system malfunction. The water quality was monitored manually the whole time and there were no issues.

We are proud that your drinking water meets or exceeds all Federal and State requirements. We have learned through our monitoring and testing that some constituents have been detected. The EPA has determined that your water IS SAFE at these levels.

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Matthew Dellwo, McCall Water Treatment Plant

Annual Drinking Water Quality Report

City Of McCall Water Treatment Facility
July, 2019

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Test Results

Chemical And Radiological Sampling History

Contaminant	Date Collected	Facility	Non Detect?	Detected Level	Units	CCR Units
1,1,1-TRICHLOROETHANE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
1,1-DICHLOROETHYLENE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
1,2,4-TRICHLOROBENZENE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
1,2-DICHLOROETHANE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
1,2-DICHLOROPROPANE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
BENZENE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
CARBON TETRACHLORIDE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
CHLOROBENZENE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
CIS-1,2-DICHLOROETHYLENE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
DICHLOROMETHANE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
ETHYLBENZENE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
NITRATE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
O-DICHLOROBENZENE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
P-DICHLOROBENZENE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
TETRACHLOROETHYLENE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
TOLUENE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
TRANS-1,2-DICHLOROETHYLENE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
TRICHLOROETHYLENE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
VINYL CHLORIDE	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000
XYLENES, TOTAL	12/18/2018	PAYETTE LAKE MANIFOLD	Y	0.000		0.000

Coliform Sampling History

Contaminant	Date Collected	P=Present A=Absent
COLIFORM (TCR)	12/18/2018	A
COLIFORM (TCR)	12/18/2018	A
COLIFORM (TCR)	12/18/2018	A
COLIFORM (TCR)	12/18/2018	A
COLIFORM (TCR)	11/20/2018	A
COLIFORM (TCR)	11/20/2018	A
COLIFORM (TCR)	11/20/2018	A
COLIFORM (TCR)	11/20/2018	A
COLIFORM (TCR)	10/23/2018	A
COLIFORM (TCR)	10/23/2018	A
COLIFORM (TCR)	10/23/2018	A
COLIFORM (TCR)	10/23/2018	A
E. COLI	09/24/2018	A
COLIFORM (TCR)	09/17/2018	A
COLIFORM (TCR)	09/17/2018	A
COLIFORM (TCR)	09/17/2018	A
COLIFORM (TCR)	09/17/2018	A
E. COLI	09/10/2018	A
E. COLI	08/27/2018	A
COLIFORM (TCR)	08/15/2018	A
COLIFORM (TCR)	08/15/2018	A
COLIFORM (TCR)	08/15/2018	A
COLIFORM (TCR)	08/15/2018	A
E. COLI	08/13/2018	A
E. COLI	08/02/2018	A
COLIFORM (TCR)	07/24/2018	A
COLIFORM (TCR)	07/24/2018	A
COLIFORM (TCR)	07/24/2018	A
COLIFORM (TCR)	07/24/2018	A
E. COLI	07/16/2018	A
E. COLI	07/02/2018	A
E. COLI	06/18/2018	A
COLIFORM (TCR)	06/06/2018	A
COLIFORM (TCR)	06/06/2018	A
COLIFORM (TCR)	06/06/2018	A
COLIFORM (TCR)	06/06/2018	A
E. COLI	06/04/2018	A
E. COLI	05/21/2018	A

E. COLI	05/10/2018	A
COLIFORM (TCR)	05/09/2018	A
COLIFORM (TCR)	05/09/2018	A
COLIFORM (TCR)	05/09/2018	A
COLIFORM (TCR)	05/09/2018	A
E. COLI	04/24/2018	A
E. COLI	04/10/2018	A
COLIFORM (TCR)	04/10/2018	A
COLIFORM (TCR)	04/10/2018	A
COLIFORM (TCR)	04/10/2018	A
COLIFORM (TCR)	04/10/2018	A
E. COLI	03/26/2018	A
E. COLI	03/20/2018	A
COLIFORM (TCR)	03/20/2018	A
COLIFORM (TCR)	03/20/2018	A
COLIFORM (TCR)	03/20/2018	A
E. COLI	02/27/2018	A
E. COLI	02/13/2018	A
COLIFORM (TCR)	02/13/2018	A
COLIFORM (TCR)	02/13/2018	A
COLIFORM (TCR)	02/13/2018	A
E. COLI	01/29/2018	A
E. COLI	01/17/2018	A
E. COLI	01/17/2018	A
COLIFORM (TCR)	01/17/2018	A
COLIFORM (TCR)	01/17/2018	A
COLIFORM (TCR)	01/17/2018	A

Lead And Copper Sampling History

Contaminant	# Samples Collected	90th %ile Result	Units	Date Collected	CCR Units
LEAD SUMMARY	12	0.000	MG/L	09/14/2017	0.000
COPPER SUMMARY	12	0.510	MG/L	09/14/2017	0.510
LEAD SUMMARY	24	0.006	MG/L	07/18/2014	6.000
COPPER SUMMARY	24	0.361	MG/L	07/18/2014	0.361

DBP Sampling History PWS Number: ID4430033 PWS Name: MCCALL CITY OF

TOTAL HALOACETIC ACIDS (HAA5)	11/20/2018	USFS SMOKEJUMPERS/MISSION STREET	N	0.038	MG/L	38.400
TOTAL HALOACETIC ACIDS (HAA5)	08/15/2018	USFS SMOKEJUMPERS/MISSION STREET	N	0.035	MG/L	35.100
TOTAL HALOACETIC ACIDS (HAA5)	05/09/2018	USFS SMOKEJUMPERS/MISSION STREET	N	0.030	MG/L	29.700
TOTAL HALOACETIC ACIDS (HAA5)	03/12/2018	USFS SMOKEJUMPERS/MISSION STREET	N	0.028	MG/L	27.500
TTHM	11/20/2018	USFS SMOKEJUMPERS/MISSION STREET	N	0.046	MG/L	45.800
TTHM	08/15/2018	USFS SMOKEJUMPERS/MISSION STREET	N	0.041	MG/L	40.700
TTHM	05/09/2018	USFS SMOKEJUMPERS/MISSION STREET	N	0.042	MG/L	41.600
TTHM	03/12/2018	USFS SMOKEJUMPERS/MISSION STREET	N	0.044	MG/L	43.600

Chlorine Maximum Residual Disinfectant Level Sampling History

Samples Collected	Chlorine Residual	Begin Date	Monitoring Period
3	1.2000	01/01/2018	JAN2018
3	1.4800	02/01/2018	FEB2018
3	1.4000	03/01/2018	MAR2018
4	1.4000	04/01/2018	APR2018
4	1.0000	05/01/2018	MAY2018
4	1.3000	06/01/2018	JUN2018
4	1.3800	07/01/2018	JUL2018
4	1.6000	08/01/2018	AUG2018
4	1.1300	09/01/2018	SEP2018
4	1.3200	10/01/2018	OCT2018
4	1.4700	11/01/2018	NOV2018
4	1.5000	12/01/2018	DEC2018

Initial Distribution System Evaluation (IDSE): JDSE is an important part of the Stage 2 Disinfection By-Products Rule (DBPR). The JDSE is a one-time study onducted by some water systems, providing disinfection or chlorination, to identify distribution system locations with concentrations oftrihalomethanes (THMs) and haloacetic acids (HAAs). Water systems

will use results from the IDSE, in conjunction with their Stage 1 DBPR compliance monitoring data, to select monitoring locations for Stage 2 DBPR. Not all water systems were required to perform an IDSE.

Lead Informational Statement (Health effects and ways to reduce exposure)

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. ***The utility named above*** is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components.

When your water has been sitting for several hours, you can minimize the potentiai for iead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available form the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Microbiological Contaminants:

(3) Turbidity - Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial **growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.**

Inorganic Contaminants:

(7) Antimony - Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.

(9) Asbestos - Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.

(10) Barium - Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.

(11) Beryllium - Some people who drink water containing beryllium well in excess of the MCL over many years could develop

intestinal lesions.

(12) Cadmium - Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.

(13) Chromium - Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.

(14) Copper - Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.

(16) Fluoride - Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Children may get mottled teeth.

(17) Lead - Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

(18) Mercury (inorganic) - Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.

(20) Nitrite - Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously

ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

(21) Selenium - Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL **over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.**

Volatile Organic Contaminants:

(73) TTHMs [Total Trihalomethanes] - Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk·of getting cancer.

Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

During the time from 3/1-3/31-2018 and 12/1-12/31-2018 we received two violations. These violations were monitoring violations due to SCADA monitoring system malfunction. Daily water quality was not affected, the water quality was continuously monitored by operators and equipment calibrations occurred daily.

We are proud that your drinking water meets or exceeds all Federal and State requirements. We have learned through our monitoring and testing that some constituents have been detected. The EPA has determined that your water IS SAFE at these levels.

All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

In our continuing efforts to maintain a safe and dependable water supply, it may be necessary to make improvements in your water system. The costs of these improvements may be reflected in the rate structure. Rate adjustments may be necessary in order to address these improvements.

Thank you for allowing us to continue providing your family with clean, quality water this year. In order to maintain a safe and dependable water supply we sometimes need to make improvements that will benefit all of our customers. These improvements are sometimes reflected as rate structure adjustments. Thank you for understanding.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Please call our office if you have questions. 634-1853

Stacy V. LaFay
Water Operations Specialist
City Of McCall

City of McCall's Water Quality Report

REPORTING YEAR 2020

We are pleased to present this year's Annual Water Quality Report (Consumer Confidence Report) as required by the Safe Drinking Water Act (SDWA). This report is designed to provide details about where your water comes from, what it contains, and how it compares to standards set by regulatory agencies. This report is a snapshot of last year's water quality. We are committed to providing you with information because informed customers are our best allies.

Water Quality Data Table

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of contaminants in water provided by public water systems. The table below lists all of the drinking water contaminants that we detected during the calendar year of this report. Although many more contaminants were tested, only those substances listed below were found in your water. All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and have nutritional value at low levels. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report. The EPA or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some of our data, though representative, may be more than one year old. In this table you will find terms and abbreviations that might not be familiar to you. To help you better understand these terms, we have provided the definitions below the table.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Average Detect In Your Water	Range Low	Range High	Sample Date	Violation	
Disinfectants & Disinfection By-Products								
(There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants)								
Chlorine (as Cl2) (ppm)	4	4	1.138	0.8	1.5	2020	No	Water additive used to control microbes
Haloacetic Acids (HAA5) (ppb)	NA	60	43.625	19.3	75.5	2020	No	By-product of drinking water chlorination
TTHMs [Total Trihalomethanes] (ppb)	NA	80	48.1	30.6	371.5	2020	No	By-product of drinking water disinfection
Microbiological Contaminants								
Total Coliform (RTCR)	NA	TT	NA	NA	NA	2020	No	Naturally present in the environment
Turbidity (NTU)	NA	0.3	99	NA	NA	2020	No	Soil runoff
99% of the samples were below the TT value of .3. A value less than 95% constitutes a TT violation. The highest single measurement was .44. Any measurement in excess of 1 is a violation unless otherwise approved by the state.								

Contaminants	MCLG	AL	Average Detect In Your Water	Range Low	Range High	Sample Date	# Samples Exceeding AL	Exceeds AL	Typical Source
Inorganic Contaminants									
Copper - action level at consumer taps (ppm)	1.3	1.3	0.42	ND	0.61	2020	0	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead - action level at consumer taps (ppb)	0	15	3.9	ND	23	2020	3	Yes	Corrosion of household plumbing systems; Erosion of natural deposits

Undetected Contaminants

The following contaminants were monitored for, but not detected, in your water.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Your Water	Violation	Typical Source
1,1,1-Trichloroethane (ppb)	200	200	ND	No	Discharge from metal degreasing sites and other factories
1,1,2-Trichloroethane (ppb)	3	5	ND	No	Discharge from industrial chemical factories
1,1-Dichloroethylene (ppb)	7	7	ND	No	Discharge from industrial chemical factories
1,2,4-Trichlorobenzene (ppb)	70	70	ND	No	Discharge from textile-finishing factories
1,2-Dichloroethane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
1,2-Dichloropropane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
Antimony (ppb)	6	6	ND	No	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder; test addition.
Barium (ppm)	2	2	ND	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Benzene (ppb)	0	5	ND	No	Discharge from factories; Leaching from gas storage tanks and landfills
Beryllium (ppb)	4	4	ND	No	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries
Cadmium (ppb)	5	5	ND	No	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; runoff from waste batteries and paints
Carbon Tetrachloride (ppb)	0	5	ND	No	Discharge from chemical plants and other industrial activities
Chlorobenzene (monochlorobenzene) (ppb)	100	100	ND	No	Discharge from chemical and agricultural chemical factories
Chromium (ppb)	100	100	ND	No	Discharge from steel and pulp mills; Erosion of natural deposits
Dichloromethane (ppb)	0	5	ND	No	Discharge from pharmaceutical and chemical factories
Ethylbenzene (ppb)	700	700	ND	No	Discharge from petroleum refineries
Fluoride (ppm)	4	4	ND	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Mercury [Inorganic] (ppb)	2	2	ND	No	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland
Nitrate [measured as Nitrogen] (ppm)	10	10	ND	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Nitrite [measured as Nitrogen] (ppm)	1	1	ND	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Radium (combined 226/228) (pCi/L)	0	5	ND	No	Erosion of natural deposits
Selenium (ppb)	50	50	ND	No	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines
Styrene (ppb)	100	100	ND	No	Discharge from rubber and plastic factories; Leaching from landfills
Tetrachloroethylene (ppb)	0	5	ND	No	Discharge from factories and dry cleaners
Thallium (ppb)	0.5	2	ND	No	Discharge from electronics, glass, and Leaching from ore-processing sites; drug factories
Toluene (ppm)	1	1	ND	No	Discharge from petroleum factories
Trichloroethylene (ppb)	0	5	ND	No	Discharge from metal degreasing sites and other factories
Uranium (ug/L)	0	30	ND	No	Erosion of natural deposits
Vinyl Chloride (ppb)	0	2	ND	No	Leaching from PVC piping; Discharge from plastics factories
Xylenes (ppm)	10	10	ND	No	Discharge from petroleum factories; Discharge from chemical factories
cis-1,2-Dichloroethylene (ppb)	70	70	ND	No	Discharge from industrial chemical factories
o-Dichlorobenzene (ppb)	600	600	ND	No	Discharge from industrial chemical factories
p-Dichlorobenzene (ppb)	75	75	ND	No	Discharge from industrial chemical factories
trans-1,2-Dichloroethylene (ppb)	100	100	ND	No	Discharge from industrial chemical factories

TERM DEFINITION

ug/L: Number of micrograms of substance in one liter of water

ppm: parts per million, or milligrams per liter (mg/L)

ppb: parts per billion, or micrograms per liter (µg/L)

pCi/L: picocuries per liter (a measure of radioactivity)

NTU: Nephelometric Turbidity Units. Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

% positive samples/month: Percent of samples taken monthly that were positive

NA: not applicable

ND: Not detected

NR: Monitoring not required, but recommended.

IMPORTANT DRINKING WATER DEFINITIONS

MCLG: Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MCL: Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

TT: Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.

AL: Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Variances and Exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

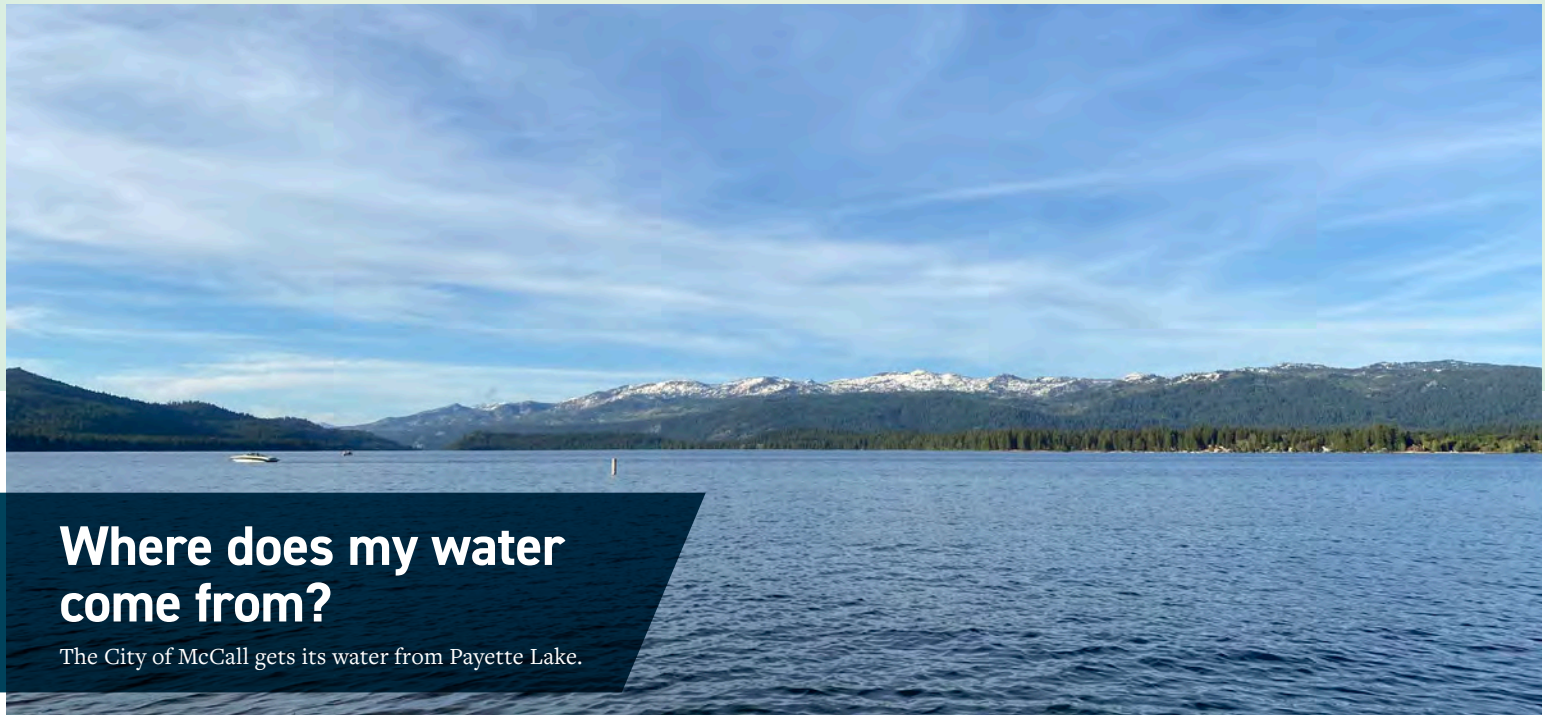
MRDLG: Maximum residual disinfection level goal. The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

MRDL: Maximum residual disinfectant level. The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MNR: Monitored Not Regulated

MPL: State Assigned Maximum Permissible Level

Monitoring and reporting of compliance data violations: February 1, 2019 through March 31, 2019 the City of McCall failed to report CT Ratio because the plant computer failed to collect required DEQ data. Water Quality was never impacted..



Where does my water come from?

The City of McCall gets its water from Payette Lake.

Source water assessment and its availability

To receive a copy of the City of McCall's Source Water Assessment please call the water treatment plant at 208-634-1853.

Why are there contaminants in my drinking water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (800-426-4791). The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity:

microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming; pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses; organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; and radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Description of Water Treatment Process

Your water is treated by filtration and disinfection. Filtration removes particles suspended in the source water. Particles typically include clays and silts, natural organic matter, iron and manganese, and microorganisms. Your water is also treated by disinfection. Disinfection involves the addition of chlorine or other disinfectants to kill bacteria and other microorganisms (viruses, cysts, etc.) that may be in the water. Disinfection is considered to be one of the major public health advances of the 20th century.

How can I get involved?

If you would like to learn more please attend any of our regularly scheduled meetings, held every other Thursday at City Hall.

Additional Information for Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. City of McCall is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Do I need to take special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

WATER CONSERVATION TIPS

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference - try one today and soon it will become second nature.

Take short showers - a 5 minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.

Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.

Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.

Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.

Water plants only when necessary.

Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.

Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.

Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill! Visit www.epa.gov/watersense for more information.

CROSS CONNECTION
Control Survey

The purpose of this survey is to determine whether a cross-connection may exist at your home or business. A cross connection is an unprotected or improper connection to a public water distribution system that may cause contamination or pollution to enter the system. We are responsible for enforcing cross-connection control regulations and insuring that no contaminants can, under any flow conditions, enter the distribution system. If you have any of the devices listed below please contact us so that we can discuss the issue, and if needed, survey your connection and assist you in isolating it if that is necessary.

- ***Boiler/ Radiant heater*** (water heaters not included)
- ***Underground lawn sprinkler system***
- ***Pool or hot tub*** (whirlpool tubs not included)
- ***Decorative pond***
- ***Watering trough***

Source Water Protection Tips

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides - they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public water system.
- Dispose of chemicals properly; take used motor oil to a recycling center.
- Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use EPA's Adopt Your Watershed to locate groups in your community, or visit the Watershed Information Network's How to Start a Watershed Team.
- Organize a storm drain stenciling project with your local government or water supplier. Stencil a message next to the street drain reminding people "Dump No Waste - Drains to River" or "Protect Your Water." Produce and distribute a flyer for households to remind residents that storm drains dump directly into your local water body.

City of McCall

For more information please contact:
Sabrina Sims, *Water Systems Manager*
Phone: 208-315-7403
Stacy LaFay, *Water Treatment Plant Manager*
Phone: 208-634-1853

City of McCall's Water Quality Report

REPORTING YEAR 2019

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Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Average Detect In Your Water	Range Low	Range High	Sample Date	Violation	Typical Source
Disinfectants & Disinfection By-Products								
(There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants)								
Chlorine (as Cl2) (ppm)	4	4	1.134	0.6	1.5	2019	No	Water additive used to control microbes
Haloacetic Acids (HAA5) (ppb)	NA	60	26.9	22.7	35.1	2019	No	By-product of drinking water chlorination
TTHMs [Total Trihalomethanes] (ppb)	NA	80	30.475	26.1	33.4	2019	No	By-product of drinking water disinfection
Microbiological Contaminants								
Total Coliform (RTCR)	NA	TT	NA	NA	NA	2019	No	Naturally present in the environment
Turbidity (NTU)	NA	0.3	99	NA	NA	2019	No	Soil runoff
99% of the samples were below the TT value of .3. A value less than 95% constitutes a TT violation. The highest single measurement was .365. Any measurement in excess of 1 is a violation unless otherwise approved by the state.								

Contaminants	MCLG	AL	Your Water	Sample Date	# Samples Exceeding AL	Exceeds AL	Typical Source
Inorganic Contaminants							
Copper - action level at consumer taps (ppm)	1.3	1.3	0.51	2017	0	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead - action level at consumer taps (ppb)	0	15	0	2017	0	No	Corrosion of household plumbing systems; Erosion of natural deposits

Undetected Contaminants

The following contaminants were monitored for, but not detected, in your water.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Your Water	Violation	Typical Source
1,1,1-Trichloroethane (ppb)	200	200	ND	No	Discharge from metal degreasing sites and other factories
1,1,2-Trichloroethane (ppb)	3	5	ND	No	Discharge from industrial chemical factories
1,1-Dichloroethylene (ppb)	7	7	ND	No	Discharge from industrial chemical factories
1,2,4-Trichlorobenzene (ppb)	70	70	ND	No	Discharge from textile-finishing factories
1,2-Dichloroethane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
1,2-Dichloropropane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
Antimony (ppb)	6	6	ND	No	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder; test addition.
Barium (ppm)	2	2	ND	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Benzene (ppb)	0	5	ND	No	Discharge from factories; Leaching from gas storage tanks and landfills
Beryllium (ppb)	4	4	ND	No	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries
Cadmium (ppb)	5	5	ND	No	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; runoff from waste batteries and paints
Carbon Tetrachloride (ppb)	0	5	ND	No	Discharge from chemical plants and other industrial activities
Chlorobenzene (monochlorobenzene) (ppb)	100	100	ND	No	Discharge from chemical and agricultural chemical factories
Chromium (ppb)	100	100	ND	No	Discharge from steel and pulp mills; Erosion of natural deposits
Dichloromethane (ppb)	0	5	ND	No	Discharge from pharmaceutical and chemical factories
Ethylbenzene (ppb)	700	700	ND	No	Discharge from petroleum refineries
Fluoride (ppm)	4	4	ND	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Mercury [Inorganic] (ppb)	2	2	ND	No	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland
Nitrate [measured as Nitrogen] (ppm)	10	10	ND	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Nitrite [measured as Nitrogen] (ppm)	1	1	ND	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Radium (combined 226/228) (pCi/L)	0	5	ND	No	Erosion of natural deposits
Selenium (ppb)	50	50	ND	No	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines
Styrene (ppb)	100	100	ND	No	Discharge from rubber and plastic factories; Leaching from landfills
Tetrachloroethylene (ppb)	0	5	ND	No	Discharge from factories and dry cleaners
Thallium (ppb)	0.5	2	ND	No	Discharge from electronics, glass, and Leaching from ore-processing sites; drug factories
Toluene (ppm)	1	1	ND	No	Discharge from petroleum factories
Trichloroethylene (ppb)	0	5	ND	No	Discharge from metal degreasing sites and other factories
Uranium (ug/L)	0	30	ND	No	Erosion of natural deposits
Vinyl Chloride (ppb)	0	2	ND	No	Leaching from PVC piping; Discharge from plastics factories
Xylenes (ppm)	10	10	ND	No	Discharge from petroleum factories; Discharge from chemical factories
cis-1,2-Dichloroethylene (ppb)	70	70	ND	No	Discharge from industrial chemical factories
o-Dichlorobenzene (ppb)	600	600	ND	No	Discharge from industrial chemical factories
p-Dichlorobenzene (ppb)	75	75	ND	No	Discharge from industrial chemical factories
trans-1,2-Dichloroethylene (ppb)	100	100	ND	No	Discharge from industrial chemical factories

TERM DEFINITION

ug/L: Number of micrograms of substance in one liter of water

ppm: parts per million, or milligrams per liter (mg/L)

ppb: parts per billion, or micrograms per liter (µg/L)

pCi/L: picocuries per liter (a measure of radioactivity)

NTU: Nephelometric Turbidity Units. Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

% positive samples/month: Percent of samples taken monthly that were positive

NA: not applicable

ND: Not detected

NR: Monitoring not required, but recommended.

IMPORTANT DRINKING WATER DEFINITIONS

MCLG: Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MCL: Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

TT: Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.

AL: Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Variances and Exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

MRDLG: Maximum residual disinfection level goal. The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

MRDL: Maximum residual disinfectant level. The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MNR: Monitored Not Regulated

MPL: State Assigned Maximum Permissible Level

Monitoring and reporting of compliance data violations: February 1, 2019 through March 31, 2019 the City of McCall failed to report CT Ratio because the plant computer failed to collect required DEQ data. Water Quality was never impacted..

TT Violation	Explanation	Length	Health Effects Language	Explanation and Comment
Surface water treatment rule filtration and disinfection violations	Between February 1 2019 and March 31 2019 the water treatment plant failed to meet CT (Contact Time) requirements because the plant computer failed to collect required DEQ data. Water Quality was never impacted.	2/1/19-3/31/19	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites, which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.	Plant computer has been fixed and back up system is in place.

Where does my water come from?

The City of McCall gets its water from Payette Lake.

Source water assessment and its availability

To receive a copy of the City of McCall's Source Water Assessment please call the water treatment plant at 208-634-1853.

Why are there contaminants in my drinking water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (800-426-4791). The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity:

microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming; pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses; organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; and radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Description of Water Treatment Process

Your water is treated by filtration and disinfection. Filtration removes particles suspended in the source water. Particles typically include clays and silts, natural organic matter, iron and manganese, and microorganisms. Your water is also treated by disinfection. Disinfection involves the addition of chlorine or other disinfectants to kill bacteria and other microorganisms (viruses, cysts, etc.) that may be in the water. Disinfection is considered to be one of the major public health advances of the 20th century.

How can I get involved?

If you would like to learn more please attend any of our regularly scheduled meetings, held every other Thursday at City Hall.

Additional Information for Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. City of McCall is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Do I need to take special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

WATER CONSERVATION TIPS

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference - try one today and soon it will become second nature.

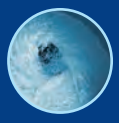
Take short showers - a 5 minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.

Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.

Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.

Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.

Water plants only when necessary.



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Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.

Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill! Visit www.epa.gov/watersense for more information.

CROSS CONNECTION
Control Survey

The purpose of this survey is to determine whether a cross-connection may exist at your home or business. A cross connection is an unprotected or improper connection to a public water distribution system that may cause contamination or pollution to enter the system. We are responsible for enforcing cross-connection control regulations and insuring that no contaminants can, under any flow conditions, enter the distribution system. If you have any of the devices listed below please contact us so that we can discuss the issue, and if needed, survey your connection and assist you in isolating it if that is necessary.

- ***Boiler/ Radiant heater*** (water heaters not included)
- ***Underground lawn sprinkler system***
- ***Pool or hot tub*** (whirlpool tubs not included)
- ***Decorative pond***
- ***Watering trough***

Source Water Protection Tips

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides - they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public water system.
- Dispose of chemicals properly; take used motor oil to a recycling center.
- Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use EPA's Adopt Your Watershed to locate groups in your community, or visit the Watershed Information Network's How to Start a Watershed Team.
- Organize a storm drain stenciling project with your local government or water supplier. Stencil a message next to the street drain reminding people "Dump No Waste - Drains to River" or "Protect Your Water." Produce and distribute a flyer for households to remind residents that storm drains dump directly into your local water body.

City of McCall

For more information please contact:
Sabrina Sims, *Water Systems Manager*
Phone: 208-315-7403
Stacy LaFay, *Water Treatment Plant Manager*
Phone: 208-634-1853

City of McCall's Water Quality Report

REPORTING YEAR 2021

We are pleased to present this year's Annual Water Quality Report (Consumer Confidence Report) as required by the Safe Drinking Water Act (SDWA). This report is designed to provide details about where your water comes from, what it contains, and how it compares to standards set by regulatory agencies. This report is a snapshot of last year's water quality. We are committed to providing you with information because informed customers are our best allies.

Water Quality Data Table

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of contaminants in water provided by public water systems. The table below lists all of the drinking water contaminants that we detected during the calendar year of this report. Although many more contaminants were tested, only those substances listed below were found in your water. All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and have nutritional value at low levels. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report. The EPA or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some of our data, though representative, may be more than one year old. In this table you will find terms and abbreviations that might not be familiar to you. To help you better understand these terms, we have provided the definitions below the table.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Average Detect In Your Water	Range Low	Range High	Sample Date	Violation	
Disinfectants & Disinfection By-Products								
(There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants)								
Chlorine (as Cl2) (ppm)	4	4	1.216	0.9	1.65	2021	No	Water additive used to control microbes
Haloacetic Acids (HAA5) (ppb)	NA	60	28.825	23.4	28.2	2021	No	By-product of drinking water chlorination
TTHMs [Total Trihalomethanes] (ppb)	NA	80	40	29	57	2021	No	By-product of drinking water disinfection
Microbiological Contaminants								
Total Coliform (RTCR)	NA	TT	NA	NA	NA	2021	No	Naturally present in the environment
Turbidity (NTU)	NA	0.3	0.038	0.01	0.347	2021	No	Soil runoff
99.9% of the samples were below the TT value of .3. A value less than 95% constitutes a TT violation. The highest single measurement was 0.347. Any measurement in excess of 1 is a violation unless otherwise.								

Contaminants	MCLG	AL	Average Detect In Your Water	Range Low	Range High	Sample Date	# Samples Exceeding AL	Exceeds AL	Typical Source
Inorganic Contaminants									
Copper - action level at consumer taps (ppm)	1.3	1.3	0.26	ND	0.29	2021	0	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead - action level at consumer taps (ppb)	0	15	8.5	ND	9	2021	5	No	Corrosion of household plumbing systems; Erosion of natural deposits

Undetected Contaminants

The following contaminants were monitored for, but not detected, in your water.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Your Water	Violation	Typical Source
1,1,1-Trichloroethane (ppb)	200	200	ND	No	Discharge from metal degreasing sites and other factories
1,1,2-Trichloroethane (ppb)	3	5	ND	No	Discharge from industrial chemical factories
1,1-Dichloroethylene (ppb)	7	7	ND	No	Discharge from industrial chemical factories
1,2,4-Trichlorobenzene (ppb)	70	70	ND	No	Discharge from textile-finishing factories
1,2-Dichloroethane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
1,2-Dichloropropane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
Antimony (ppb)	6	6	ND	No	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder; test addition.
Barium (ppm)	2	2	ND	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Benzene (ppb)	0	5	ND	No	Discharge from factories; Leaching from gas storage tanks and landfills
Beryllium (ppb)	4	4	ND	No	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries
Cadmium (ppb)	5	5	ND	No	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; runoff from waste batteries and paints
Carbon Tetrachloride (ppb)	0	5	ND	No	Discharge from chemical plants and other industrial activities
Chlorobenzene (monochlorobenzene) (ppb)	100	100	ND	No	Discharge from chemical and agricultural chemical factories
Chromium (ppb)	100	100	ND	No	Discharge from steel and pulp mills; Erosion of natural deposits
Dichloromethane (ppb)	0	5	ND	No	Discharge from pharmaceutical and chemical factories
Ethylbenzene (ppb)	700	700	ND	No	Discharge from petroleum refineries
Fluoride (ppm)	4	4	ND	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Mercury [Inorganic] (ppb)	2	2	ND	No	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland
Nitrate [measured as Nitrogen] (ppm)	10	10	ND	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Nitrite [measured as Nitrogen] (ppm)	1	1	ND	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Radium (combined 226/228) (pCi/L)	0	5	ND	No	Erosion of natural deposits
Selenium (ppb)	50	50	ND	No	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines
Styrene (ppb)	100	100	ND	No	Discharge from rubber and plastic factories; Leaching from landfills
Tetrachloroethylene (ppb)	0	5	ND	No	Discharge from factories and dry cleaners
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Uranium (ug/L)	0	30	ND	No	Erosion of natural deposits
Vinyl Chloride (ppb)	0	2	ND	No	Leaching from PVC piping; Discharge from plastics factories
Xylenes (ppm)	10	10	ND	No	Discharge from petroleum factories; Discharge from chemical factories
cis-1,2-Dichloroethylene (ppb)	70	70	ND	No	Discharge from industrial chemical factories
o-Dichlorobenzene (ppb)	600	600	ND	No	Discharge from industrial chemical factories
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microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming; pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses; organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; and radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

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- ***Underground lawn sprinkler system***
- ***Pool or hot tub*** (whirlpool tubs not included)
- ***Decorative pond***
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Source Water Protection Tips

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides - they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public water system.
- Dispose of chemicals properly; take used motor oil to a recycling center.
- Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use EPA's Adopt Your Watershed to locate groups in your community, or visit the Watershed Information Network's How to Start a Watershed Team.
- Organize a storm drain stenciling project with your local government or water supplier. Stencil a message next to the street drain reminding people "Dump No Waste - Drains to River" or "Protect Your Water." Produce and distribute a flyer for households to remind residents that storm drains dump directly into your local water body.

City of McCall

For more information please contact:
Sabrina Sims, *Water Systems Manager*
Phone: 208-315-7403
Stacy LaFay, *Water Treatment Plant Manager*
Phone: 208-634-1853

City of McCall's
Water Quality Report

REPORTING YEAR 2022

We are pleased to present this year's Annual Water Quality Report (Consumer Confidence Report) as required by the Safe Drinking Water Act (SDWA). This report is designed to provide details about where your water comes from, what it contains, and how it compares to standards set by regulatory agencies. This report is a snapshot of last year's water quality. We are committed to providing you with information because informed customers are our best allies.

Water Quality Data Table

In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of contaminants in water provided by public water systems. The table below lists all of the drinking water contaminants that we detected during the calendar year of this report. Although many more contaminants were tested, only those substances listed below were found in your water. All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in our drinking water. Removing all contaminants would be extremely expensive, and in most cases, would not provide increased protection of public health. A few naturally occurring minerals may actually improve the taste of drinking water and have nutritional value at low levels. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report. The EPA or the State requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some of our data, though representative, may be more than one year old. In this table you will find terms and abbreviations that might not be familiar to you. To help you better understand these terms, we have provided the definitions below the table.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Average Detect In Your Water	Range Low	Range High	Sample Date	Violation	
Disinfectants & Disinfection By-Products								
(There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants)								
Chlorine (as Cl2) (ppm)	4	4	1.175	0.08	1.7	2022	No	Water additive used to control microbes
Haloacetic Acids (HAA5) (ppb)	NA	60	35.5	31.1	37.2	2022	No	By-product of drinking water chlorination
TTHMs [Total Trihalomethanes] (ppb)	NA	80	48	36.7	67	2022	No	By-product of drinking water disinfection
Microbiological Contaminants								
Total Coliform (RTCR)	NA	TT	NA	NA	NA	2022	No	Naturally present in the environment
Turbidity (NTU)	NA	0.3	0.078	0.017	0.275	2022	No	Soil runoff
100% of the samples were below the TT value of .3. A value less than 95% constitutes a TT violation. The highest single measurement was 0.275. Any measurement in excess of 1 is a violation unless otherwise.								

Contaminants	MCLG	AL	Average Detect In Your Water	Range Low	Range High	Sample Date	# Samples Exceeding AL	Exceeds AL	Typical Source
Inorganic Contaminants									
Copper - action level at consumer taps (ppm)	1.3	1.3	0.23	ND	1.35	2022	1	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead - action level at consumer taps (ppb)	0	15	34	ND	134	2022	3	Yes	Corrosion of household plumbing systems; Erosion of natural deposits

Undetected Contaminants

The following contaminants were monitored for, but not detected, in your water.

Contaminants	MCLG or MRDLG	MCL, TT, or MRDL	Your Water	Violation	Typical Source
1,1,1-Trichloroethane (ppb)	200	200	ND	No	Discharge from metal degreasing sites and other factories
1,1,2-Trichloroethane (ppb)	3	5	ND	No	Discharge from industrial chemical factories
1,1-Dichloroethylene (ppb)	7	7	ND	No	Discharge from industrial chemical factories
1,2,4-Trichlorobenzene (ppb)	70	70	ND	No	Discharge from textile-finishing factories
1,2-Dichloroethane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
1,2-Dichloropropane (ppb)	0	5	ND	No	Discharge from industrial chemical factories
Antimony (ppb)	6	6	ND	No	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder; test addition.
Barium (ppm)	2	2	ND	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Benzene (ppb)	0	5	ND	No	Discharge from factories; Leaching from gas storage tanks and landfills
Beryllium (ppb)	4	4	ND	No	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries
Cadmium (ppb)	5	5	ND	No	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; runoff from waste batteries and paints
Carbon Tetrachloride (ppb)	0	5	ND	No	Discharge from chemical plants and other industrial activities
Chlorobenzene (monochlorobenzene) (ppb)	100	100	ND	No	Discharge from chemical and agricultural chemical factories
Chromium (ppb)	100	100	ND	No	Discharge from steel and pulp mills; Erosion of natural deposits
Dichloromethane (ppb)	0	5	ND	No	Discharge from pharmaceutical and chemical factories
Ethylbenzene (ppb)	700	700	ND	No	Discharge from petroleum refineries
Fluoride (ppm)	4	4	ND	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
Mercury [Inorganic] (ppb)	2	2	ND	No	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland
Nitrate [measured as Nitrogen] (ppm)	10	10	ND	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Nitrite [measured as Nitrogen] (ppm)	1	1	ND	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Radium (combined 226/228) (pCi/L)	0	5	ND	No	Erosion of natural deposits
Selenium (ppb)	50	50	ND	No	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines
Styrene (ppb)	100	100	ND	No	Discharge from rubber and plastic factories; Leaching from landfills
Tetrachloroethylene (ppb)	0	5	ND	No	Discharge from factories and dry cleaners
Thallium (ppb)	0.5	2	ND	No	Discharge from electronics, glass, and Leaching from ore-processing sites; drug factories
Toluene (ppm)	1	1	ND	No	Discharge from petroleum factories
Trichloroethylene (ppb)	0	5	ND	No	Discharge from metal degreasing sites and other factories
Uranium (ug/L)	0	30	ND	No	Erosion of natural deposits
Vinyl Chloride (ppb)	0	2	ND	No	Leaching from PVC piping; Discharge from plastics factories
Xylenes (ppm)	10	10	ND	No	Discharge from petroleum factories; Discharge from chemical factories
cis-1,2-Dichloroethylene (ppb)	70	70	ND	No	Discharge from industrial chemical factories
o-Dichlorobenzene (ppb)	600	600	ND	No	Discharge from industrial chemical factories
p-Dichlorobenzene (ppb)	75	75	ND	No	Discharge from industrial chemical factories
trans-1,2-Dichloroethylene (ppb)	100	100	ND	No	Discharge from industrial chemical factories

TERM DEFINITION

ug/L: Number of micrograms of substance in one liter of water

ppm: parts per million, or milligrams per liter (mg/L)

ppb: parts per billion, or micrograms per liter (µg/L)

pCi/L: picocuries per liter (a measure of radioactivity)

NTU: Nephelometric Turbidity Units. Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

% positive samples/month: Percent of samples taken monthly that were positive

NA: not applicable

ND: Not detected

NR: Monitoring not required, but recommended.

IMPORTANT DRINKING WATER DEFINITIONS

MCLG: Maximum Contaminant Level Goal: The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MCL: Maximum Contaminant Level: The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

TT: Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.

AL: Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

Variances and Exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

MRDLG: Maximum residual disinfection level goal. The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

MRDL: Maximum residual disinfectant level. The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MNR: Monitored Not Regulated

MPL: State Assigned Maximum Permissible Level

Monitoring and reporting of compliance data violations: A review of Department of Environmental Quality (DEQ) records indicates that the City of McCall public water system (McCall) failed to submit a sample or report within the required time frame. If a sample was taken, or a report completed, please contact DEQ, and provide the results so that we may adjust our records.

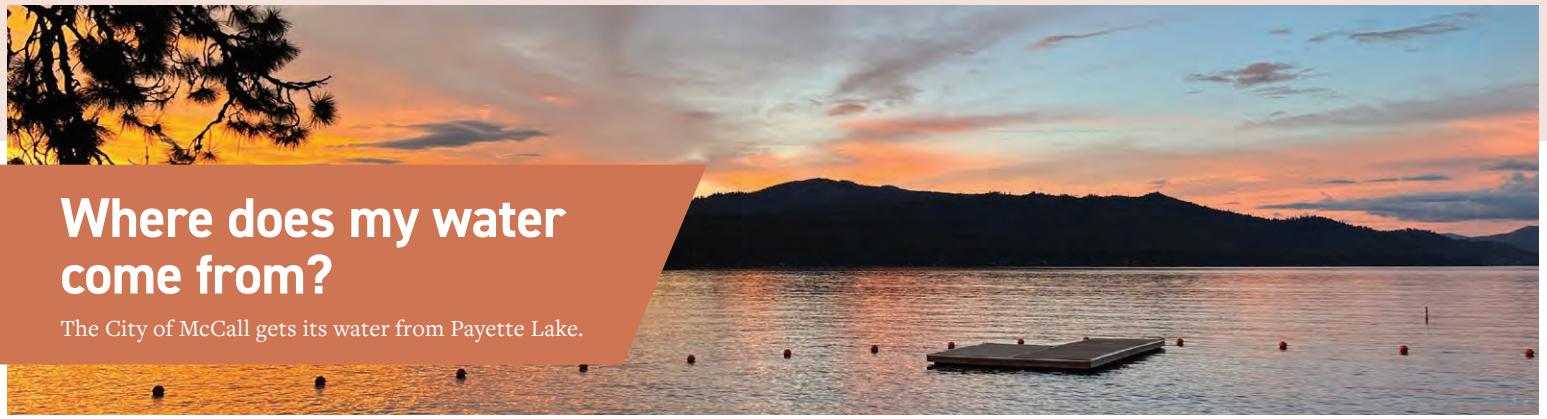
Source	Contaminant or Report	# of Samples Required	Monitoring Period Due Date
Distribution System	Alkilinity, Calcium, Conductivity, pH, Temperature	6	7/1/2022 - 12/31/2022
Payetete Lake Manifold	Calcium, Conductivity, pH, Temperature	2	7/1/2022 - 12/31/2022

Missing samples and reports results in a Failure to Monitor (FTM) or Failure to Report (FTR) violation and McCall will remain out of compliance for the listed contaminant(s) until DEQ receives the next required sample/report. Repeated violations can result in a disapproval of the water system and an initiation of formal enforcement action by DEQ.

This violation requires McCall to do the following:

- Within one year of the violation date, provide public notification. (Community Systems can include it in the Consumer Confidence Report).
- • Within 10 days of the posting or delivery, provide copy of the notification and certification form to DEQ.
- Sample public notification and certification templates are available by choosing the 'Tier 3' selection on DEQ's Public Drinking Water System Switchboard: http://www2.deq.idaho.gov/water/PublicNotificationTemplates/.

If you have questions, please contact the DEQ Boise Regional Office at (208) 373-0550.



Where does my water come from?

The City of McCall gets its water from Payette Lake.

Source water assessment and its availability

To receive a copy of the City of McCall's Source Water Assessment please call the water treatment plant at 208-634-7802.

Why are there contaminants in my drinking water?

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline (800-426-4791). The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity: microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial, or domestic wastewater discharges, oil and gas production, mining, or farming; pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses; organic Chemical Contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; and radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Description of Water Treatment Process

Your water is treated by filtration and disinfection. Filtration removes particles suspended in the source water. Particles typically include clays and silts, natural organic matter, iron and manganese, and microorganisms. Your water is also treated by disinfection. Disinfection involves the addition of chlorine or other disinfectants to kill bacteria and other microorganisms (viruses, cysts, etc.) that may be in the water. Disinfection is considered to be one of the major public health advances of the 20th century.

How can I get involved?

If you would like to learn more please attend any of our regularly scheduled meetings, held every other Thursday at City Hall.

Additional Information for Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. City of McCall is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

Do I need to take special precautions?

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

WATER CONSERVATION TIPS

Did you know that the average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day? Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference - try one today and soon it will become second nature.

Take short showers - a 5 minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.

Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.

Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.

Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.

Water plants only when necessary.

Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.

Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.

Teach your kids about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill! Visit www.epa.gov/watersense for more information.

CROSS CONNECTION
Control Survey

The purpose of this survey is to determine whether a cross-connection may exist at your home or business. A cross connection is an unprotected or improper connection to a public water distribution system that may cause contamination or pollution to enter the system. We are responsible for enforcing cross-connection control regulations and insuring that no contaminants can, under any flow conditions, enter the distribution system. If you have any of the devices listed below please contact us so that we can discuss the issue, and if needed, survey your connection and assist you in isolating it if that is necessary.

- ***Boiler/ Radiant heater*** (water heaters not included)
- ***Underground lawn sprinkler system***
- ***Pool or hot tub*** (whirlpool tubs not included)
- ***Decorative pond***
- ***Watering trough***

Source Water Protection Tips

Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides - they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public water system.
- Dispose of chemicals properly; take used motor oil to a recycling center.
- Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use EPA's Adopt Your Watershed to locate groups in your community, or visit the Watershed Information Network's How to Start a Watershed Team.
- Organize a storm drain stenciling project with your local government or water supplier. Stencil a message next to the street drain reminding people "Dump No Waste - Drains to River" or "Protect Your Water." Produce and distribute a flyer for households to remind residents that storm drains dump directly into your local water body.

City of McCall

For more information please contact:
Sabrina Sims, *Water Systems Manager*
Phone: 208-315-7403

ATTACHMENT 7

THE U.S. NATIONAL BLUEPRINT FOR TRANSPORTATION DECARBONIZATION

A Joint Strategy to Transform Transportation

THE VISION

Transportation connects us. It connects people, countries, and cultures, and draw us closer to one another. It is also the backbone of our economy and critical to supporting the daily needs of all Americans. Our transportation system has been an engine for growth and prosperity over many decades, but that growth has not come without consequences, and that prosperity has not been shared equally. The transportation sector is now the largest source of greenhouse gas emissions in the United States, contributing to the climate crisis that is worsening quality of life in cities, towns, and rural communities throughout America. Emissions from the transportation sector also contribute to poor air quality. In the United States, these effects disproportionately impact underserved and disadvantaged communities.

To address the climate crisis, we must eliminate nearly all greenhouse gas (GHG) emissions from the sector by 2050 and implement a holistic strategy to achieve a future mobility system that is clean, safe, secure, accessible, affordable, and equitable, and provides sustainable transportation options for people and goods. This *U.S. National Blueprint for Transportation Decarbonization* (Blueprint) is the roadmap for how we can address these issues to provide better transportation options, expand affordable and accessible options to improve efficiency, and transition to zero-emission vehicles and fuels.

This *Blueprint* offers a whole-of-government approach to transform the transportation sector and sets forth an interagency call to action to coordinate and work effectively together. Achieving our goals will require close cooperation with industry, local, regional, state, and Tribal governments, non-profits, and other stakeholder groups, as well as allies around the world. With bold, coordinated actions, together we can build a clean transportation system that is clean, safe, secure, accessible, affordable, and equitable, for all Americans to help create a more sustainable future for generations to come.

"The domestic transportation sector presents an enormous opportunity to drastically reduce emissions that accelerate climate change and reduce harmful pollution. The Department of Energy is prepared to implement this Blueprint alongside our partners within the Biden-Harris Administration to ensure all Americans feel the benefits of the clean transportation transition: good-paying manufacturing jobs, better air quality, and lower transportation costs."

Jennifer M. Granholm
Secretary, U.S. Department of Energy

"Transportation policy is inseparable from housing and energy policy, and transportation accounts for a major share of U.S. greenhouse gas emissions, so we must work together in an integrated way to confront the climate crisis. Every decision about transportation is also an opportunity to build a cleaner, healthier, more prosperous future. When our air is cleaner; when more people can get good-paying jobs; when everyone stays connected to the resources they need and the people they love, we are all better off."

Pete Buttigieg
Secretary, U.S. Department of Transportation

"Under the leadership of President Biden, the Environmental Protection Agency is working with our federal partners to aggressively reduce pollution that is harming people and our planet—while saving families money at the same time. At EPA, our priority is to protect public health, especially in overburdened communities, while advancing the President's ambitious climate agenda. This Blueprint is a step forward in delivering on those goals and accelerating the transition to a clean transportation future."

Michael S. Regan
Administrator, U.S. Environmental Protection Agency

"The Department of Housing and Urban Development is proud to join our federal partners in ensuring an equitable transition toward a decarbonized transportation future. Any investments we make must provide opportunities for all, including the communities and households that have historically been underserved by our transportation sector. We look forward to working with our local and federal partners to make sure the built environment fully supports a clean, affordable, and efficient transportation sector: from planning to the construction of affordable housing near transit."

Marcia Fudge
Secretary, U.S. Department of Housing and Urban Development

Decarbonizing our transportation sector is achievable, and the benefits will improve the lives of Americans for generations to come.

CONTENTS

I. EXECUTIVE SUMMARY

The transportation sector is the largest source of greenhouse gas emissions in the United States, responsible for one-third of all emissions. To address the growing climate crisis, and to meet the goal of net-zero GHG emissions economy-wide by 2050, it is **critical to decarbonize transportation by eliminating nearly all GHG emissions from the sector**.[1,2]

Transportation costs are the second largest household expense for Americans and a well-planned transition to a sustainable transportation future will also result in a more affordable and equitable transportation system, with improved transportation services; more mobility choices; improved air quality and health; greater energy security; better quality of life and accessibility; improved health outcomes; enhanced access to a variety of housing options, services, and amenities; well-paying jobs; and safer, more vibrant and resilient communities throughout the country. A decarbonized transportation system can mobilize a sustainable economy that benefits everyone. As our transportation system and communities are increasingly threatened by worsening climate impacts such as hurricanes, wildfires, flooding, heatwaves, and drought, decarbonizing the sector is essential to addressing this existential crisis.

The recently enacted Bipartisan Infrastructure Law (BIL) and Inflation Reduction Act (IRA) together represent historic investments in the future of our nation that will transform how we move and live while we build the backbone of a safer and more sustainable transportation system. This *Blueprint for Transportation Decarbonization* follows the momentum

Decarbonizing the transportation sector will require multiple strategies and resources to deliver safe, effective, affordable, and sustainable solutions to existing and emerging challenges.

from those investments to crystallize a first-of-its-kind strategy for federal leadership and partnerships to decarbonize the entire U.S. transportation sector. Decarbonizing transportation will affect everyone, and solutions must address the needs of all urban, suburban, and rural communities; businesses of all sizes; and individuals and families at every socioeconomic level. The scope, scale, and speed of the shift will continue to require solutions that leverage market forces and private sector investments, which government policies and investments should jumpstart and guide.

[1] The Long-Term Strategy published by the White House in 2021 calls for an 80-100% reduction in transportation emissions by 2050, that combined with some carbon dioxide removal, or negative emissions, allows achieving a net-zero-emissions economy.

[2] This Blueprint uses the term "decarbonization" to refer to all greenhouse gas emissions.

Decarbonizing the transportation sector will require multiple strategies and resources to deliver clean, safe, secure, accessible, affordable, and equitable solutions to existing and emerging challenges. Working with partners to enhance land-use planning will tackle the problem at the root and make it appealing and practical for people to take fewer or shorter trips, or to walk or bike on those trips where that is feasible. Implementing large investments in rail, public transportation, and safe active transportation infrastructure will give people the option to safely use more energy-efficient forms of transportation. And, thanks to significant strides in research, development, and demonstration (RD&D), technologies to decarbonize most transportation systems are within sight and offer realistic and viable pathways. The electrification of cars, trucks, and buses and providing the necessary infrastructure to charge them is underway and must accelerate. Given different applications and requirements, decarbonizing the entire transportation sector will require a diverse portfolio of solutions and technologies. This Blueprint focuses on those solutions that are viable and have sufficient resources to scale. Additional RD&D will be needed to further improve certain solutions and reduce costs, but progress and demonstration of promising technologies is well underway.

COORDINATION IS NEEDED

Implementing a holistic decarbonization strategy will require coordinated actions from federal, regional, state, local, and Tribal governments; non-profit and philanthropic organizations; and private industries. In recognition of our critical roles, the United States Department of Energy (DOE), the United States Department of Transportation (DOT), the United States Environmental Protection Agency (EPA), and the United States Department of Housing and Urban Development (HUD) signed a joint memorandum of understanding (MOU) in September of 2022 to formalize our commitment to the highest level of collaboration and coordination on transportation decarbonization.

As an essential part of the MOU, the four agencies committed to creating a decarbonization strategy for the entire transportation sector to **guide future policymaking and research, development, demonstration, and deployment in the public and private sectors**. This Blueprint articulates that strategy and enumerates the actions needed to transform how people and goods move throughout the United States, all built upon five guiding principles:

- **Implement Bold Actions to Achieve Measurable Results:** Act upon the urgency of the climate crisis and seize the critical opportunity to improve lives by prioritizing efforts that measurably and rapidly reduce GHG emissions and improve health outcomes, especially for overburdened communities.
- **Embrace Creative Solutions Across the Entire Transportation System:** Evaluate a broad set of solutions to reduce emissions; including battery electric vehicles (EVs); improved land-use planning; infrastructure investments; and new policies; technologies; and business models that support clean modes of travel and zero-emission vehicles, including battery electric, plug-in hybrid electric, and hydrogen fuel cell electric vehicles, for passengers and freight.
- **Ensure Safety, Equity, and Access:** Focus on approaches that prioritize safety; include community engagement; address consumer needs and reduce emissions; expand accessibility and affordability of travel; distribute benefits more equitably and address disproportionate burdens; enhance infrastructure resiliency to a changing climate; and improve quality of life, health outcomes, and economic opportunity, particularly in overburdened and historically underserved communities.
- **Increase Collaboration:** Create and support collaborative programs that leverage the combined expertise of DOE, DOT, EPA, HUD, and other federal

partners, and expand the federal government's partnerships with regional, state, local, and Tribal governments; private industry; community-based organizations; and other stakeholders.

- **Establish U.S. Leadership:** Position the U.S. to lead the global race to clean transportation solutions, creating well-paying domestic jobs, strengthening U.S. energy independence and security, and developing robust and sustainable new domestic and international supply chains for clean transportation technologies.

IMMEDIATE ACTIONS AND LONG-TERM PLANNING

Implementing immediate strategies that achieve meaningful emissions reductions this decade is essential to reaching our nation's 2030 emissions reduction goals in line with the president's commitment and the U.S. Nationally Determined Contribution under the Paris Agreement. We must work concurrently to develop solutions that will result in full economy-wide decarbonization by midcentury. This Blueprint provides a comprehensive, system-level perspective of the entire transportation system across all passenger and freight travel modes and fuels, and lays out three key strategies to achieve decarbonization:

1. **Increase convenience** by supporting community design and land-use planning at the local and regional levels that ensure that job centers, shopping, schools, entertainment, and essential services are strategically located near where people live to reduce commute burdens, improve walkability and bikeability, and improve quality of life…
   …Because every hour we don't spend sitting in traffic is an hour we can spend focused on the things and the people we love, all while reducing GHG emissions.
2. **Improve efficiency** by expanding affordable, accessible, efficient, and reliable options like public transportation and rail, and improving the efficiency of all vehicles…
   …Because everyone deserves efficient transportation options that will allow them to move around affordably and safely, and because consuming less energy as we move saves money, strengthens our national security, and reduces GHG emissions.
3. **Transition to clean options** by deploying zero-emission vehicles and fuels for cars, commercial trucks, transit, boats, airplanes, and more…
   …Because no one should be exposed to air pollution in their community or on their ride to school or work and eliminating GHG emissions from transportation is imperative to tackle the climate crisis.

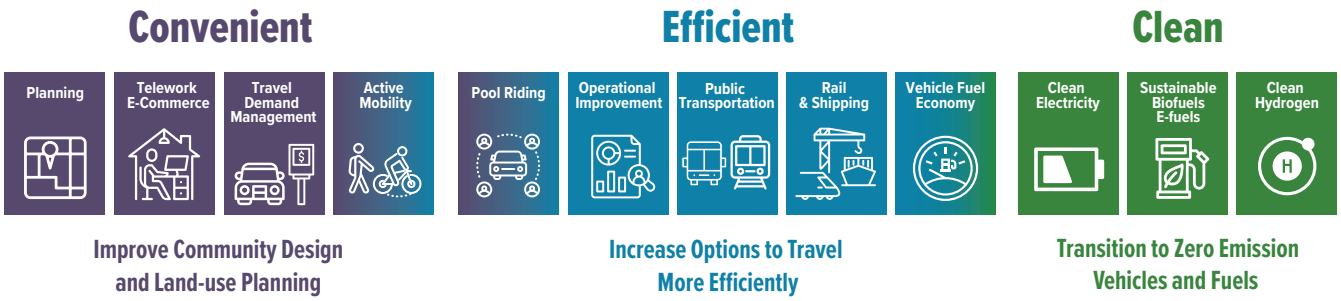


Figure A. Summary of transportation decarbonization strategies.

While the first two strategies—increasing convenience and improving efficiency—will contribute to reducing GHG emissions and produce significant co-benefits, transitioning to clean options is expected to drive the majority of emissions reductions. Given the broad array of vehicle types, technologies, and usage patterns, a successful transition will require various vehicle and fuel solutions and must consider full life-cycle emissions. This Blueprint focuses on each major transportation mode and identifies specific decarbonization opportunities and challenges, highlighting the role of various clean technologies for various applications.

1 icon represents limited long-term opportunity 2 icons represents large long-term opportunity 3 icons represents greatest long-term opportunity	BATTERY/ELECTRIC	HYDROGEN	SUSTAINABLE LIQUID FUELS
Light Duty Vehicles (49%)*		—	TBD
Medium, Short-Haul Heavy Trucks & Buses (~14%)			
Long-Haul Heavy Trucks (~7%)			
Off-road (10%)			
Rail (2%)			
Maritime (3%)		†	
Aviation (11%)			
Pipelines (4%)		TBD	TBD
Additional Opportunities	• Stationary battery use • Grid support (managed EV charging)	• Heavy industries • Grid support • Feedstock for chemicals and fuels	• Decarbonize plastics/chemicals • Bio-products
RD&D Priorities	• National battery strategy • Charging infrastructure • Grid integration • Battery recycling	• Electrolyzer costs • Fuel cell durability and cost • Clean hydrogen infrastructure	• Multiple cost-effective drop-in sustainable fuels • Reduce ethanol carbon intensity • Bioenergy scale-up

* All emissions shares are for 2019

† Includes hydrogen for ammonia and methanol

Figure B. Summary of vehicle improvement strategies and technology solutions for different travel modes that are needed to reach a net-zero economy in 2050 (more details provided in Section 5).

To achieve a decarbonized transportation sector, the four agencies and our partners will need to deploy and leverage the full extent of our tools, expertise, and resources, such as:

- **Policy and Regulation:** The federal government, along with regional, state, local, and Tribal governments, and with international partners and allies, can use a variety of policy and regulatory levers, including long-term planning, standards, and coordinated procurement to support decarbonization of the transportation sector.
- **Investments and Financing:** All levels of government and the private sector can support decarbonization through strategic investments to deploy infrastructure and support manufacturing that accelerate the transition to cleaner, active, and more

efficient modes of transportation and vehicles and facilitate the transition to zero-emission vehicles and sustainable fuels.

- **Research and Innovation:** All levels of government, the private sector, and philanthropy can focus resources on RD&D to identify and scale technologies and tools that will achieve decarbonization. Reducing the cost of clean energy transportation technologies will be required to drive the scale and pace of adoption needed for sector-wide decarbonization and to achieve market pull to accelerate deployment.
- **Data and Tools:** Complete and comprehensive information is needed for the public and decision makers to understand the benefits of clean mobility options and the implications for energy, infrastructure, the economy, and our environment.
- **Education and Training:** Workforce training and education are essential to support a transition to diverse and well-paying clean transportation sector careers. Expanded training opportunities will be especially important for residents and businesses in disadvantaged communities[3].
- **Stakeholder Engagement and Public-Private Partnerships:** Stakeholder engagement that ensures representation from traditionally underrepresented, overburdened, and underserved communities across all the proposed strategies in this Blueprint will be essential to achieving an equitable transportation future. Partnerships among regional, state, local, and Tribal governments, with disadvantaged communities, the private sector, and philanthropic organizations, will also be critical. All levels of government need to align their efforts and work with private industry and community stakeholders to support sustained and targeted actions.

A CALL TO ACTION

This Blueprint, which is an important step toward a decarbonized transportation future, will be followed by more detailed decarbonization Action Plans. The agencies will develop and implement the Action Plans and will work with other federal agencies, governments at the regional, state, local, and Tribal levels, philanthropic organizations, the private sector, and with global partners to achieve the following milestones:

[3] As set forth in Executive Order 14008 on Tackling the Climate Crisis at Home and Abroad, disadvantaged communities are those that are marginalized, underserved, and overburdened by pollution. For more detail on specific indicators, see the Council on Environmental Quality's Climate and Economic Justice Screening tool.

Before 2030 – Turning the Tide on Transportation GHGs: Research and Investments to Support Deployment

Maximize the impact of the historic BIL/IRA investments and catalyze collaboration and private investments

Partner with local communities to develop and demonstrate effective, equitable, and scalable local or regional land-use and planning solutions to increase convenience and reduce emissions by making it possible for people to take fewer or shorter trips Provide best practices, data, tools, and technical assistance on system-level design solutions to increase convenience and reduce emissions
Work with public and private sector partners to identify and advance solutions for a more equitable and healthier transportation system including support for transit-oriented development
Support land-use, street design, and development policies that make walking and biking easier, safer, and more convenient
Reduce national transportation cost burden by at least 5% by 2030 REF
Invest in rail, public transportation, and active transportation infrastructure to provide the option to use more affordable and energy-efficient forms of transportation
Provide incentives to support greater use of efficient travel modes and vehicles and reduce the transportation cost burden on disadvantaged communities. Continue to strengthen standards to improve vehicle efficiency
Set clear, ambitious but achievable targets across all travel modes (e.g., sales shares of zero-emission vehicles, volumes of sustainable fuels, emissions reduction targets)
Work with international partners to define targets, infrastructure standards, and implementation plans to encourage international shipping and aviation to rapidly decarbonize
Invest in research and innovation to further develop and demonstrate clean technologies (e.g., achieve battery, hydrogen electrolysis, and sustainable fuel cost targets) and enable seamless integration with energy systems
Continue and expand funding and market incentives to accelerate the uptake of low- or zero-emission vehicles and invest in supporting infrastructure (e.g., vehicle rebates and EV charging infrastructure), especially in low-income and overburdened communities
Develop a robust workforce including by engaging residents and businesses in disadvantaged communities and secure domestic and international supply chain solutions to ensure the U.S. can manufacture enough clean vehicles and fuels to meet rapidly growing demand

2030-2040 – Accelerating Change: Scaling Up Deployment of Clean Solutions

Adapt strategies and implementation plans in response to global events, consumer response, and technology progress

- Continue to implement land-use and planning solutions and policies at the appropriate scale while ensuring transportation infrastructure is equitable and resilient to a changing climate
- Administer forward-looking policy to maximize the positive impact of transformative technologies, like automation, in terms of quality of life and emissions
- Continue to invest in and encourage greater use of efficient travel modes for passenger and freight to optimize travel and freight logistics and improve fuel economy
- Leverage technologies and innovative business models to enable multimodal and shared travel
- Continue to strengthen standards to further improve vehicle efficiency
- Transition all new vehicles sales to zero-emission technologies and scale up production and use of sustainable fuels
- Ensure infrastructure needed to support clean technologies is in place (e.g., EV charging, clean hydrogen and sustainable fuel refueling) and is fully integrated in the energy systems
- Continue to build resilient supply chains, expand infrastructure, and implement a robust workforce development strategy to enable a full transition to zero-emission solutions

2040-2050 – Completing the Transition: A Sustainable and Equitable Future

Ensure that no one is left behind and do our part to achieve a net-zero-emissions economy

- Continue to support the implementation of equitable regional or local land-use and planning solutions and policies to reduce emissions and achieve net-zero-emissions goals
- Fully leverage the system-wide potential for efficient travel modes like rail, transit, and shared multimodal mobility and maximize vehicle efficiency
- Support fleet turnover to fully replace legacy vehicles and petroleum infrastructure with clean zero-emission solutions
- Fully integrate the clean transportation and clean energy systems to ensure reliable operations of mobility, freight, and energy supply and delivery networks

The above efforts will complement and support the various GHG emissions reduction goals and targets the nation has committed to:

Transportation Mode	Share of Current Transportation Emissions	Federal GHG Emissions Reduction Goals
 Light-Duty Vehicles	49%	• Achieve 50% of new vehicle sales being zero-emission by 2030 supporting a pathway for full adoption, and ensure that new internal combustion engine vehicles are as efficient as possible • Deploy 500,000 EV chargers by 2030 REF • Ensure 100% federal fleet procurement be zero-emission by 2027 REF
 Medium and Heavy-Duty Trucks and Buses	21%	• Aim to have 30% of new vehicle sales be zero-emission by 2030 and 100% by 2040 REF • Ensure 100% federal fleet procurement is zero-emission by 2035 REF
 Off-road	10%	• Work to establish specific targets • Focus resources to develop technology pathways and set efficiency and zero-emissions vehicle and equipment targets
 Rail	2%	• Work to establish specific targets • Focus resources to develop technology pathways and set efficiency and zero-emissions vehicle targets • Encourage greater use for passenger and freight travel to reduce emissions from road vehicles
 Maritime	3%	• Continue to support the Zero-Emission Shipping Mission (ZESM) goals to ensure that 5% of the global deep-sea fleet are capable of using zero-emission fuels by 2030, at least 200 of these ships primarily use these fuels across the main deep sea shipping route, and 10 large trade ports covering at least three continents can supply zero-emission fuels by 2030 REF • Support the U.S. domestic maritime sector by performing more RD&D into sustainable fuels and technologies and incentivize U.S. commercial vessel operators to move towards lower GHG emissions • Work with countries in the International Maritime Organization to adopt a goal of achieving zero emissions from international shipping by 2050 REF
 Aviation	11%	• Reduce aviation emissions by 20% by 2030 when compared to a business-as-usual scenario • Achieve net-zero GHG emissions from the U.S. aviation sector by 2050 • Catalyze the production of at least three billion gallons of SAF per year by 2030 and ~35 billion gallons by 2050, enough to supply the entire sector REF

Pipelines	**4%**	• Work to establish specific targets • By 2036, repair or replace 1,000 miles of high-risk, leak-prone, community-owned legacy gas distribution pipeline infrastructure, as well as an estimated reduction of 1,000 metric tons of methane emissions REF • Eliminate leakages and enable use of pipelines for clean sustainable fuels
Total Sector	**100%**	• 80–100% Emissions Reductions by 2050 (**in line with the U.S. LTS**)

Climate strategies must also help communities fulfill their equity and environmental justice responsibilities. Overburdened and historically underserved communities continue to bear the economic and health burdens of higher emissions, noise, and worsened air quality, and it is critical that these communities are not left behind in the transition to a decarbonized economy, as called for in the President's Justice40 Initiative (see textbox on page 16). Strategies that combat the climate crisis have the ability to strengthen all communities and ensure that infrastructure investments will address current and future needs and avoid the unequal impacts of the past. Moreover, we must ensure that our investments in low-carbon solutions build resilience to the impacts of climate change that disproportionately affect some communities. Building a **clean, safe, secure, accessible, affordable, equitable, and decarbonized** transportation system will ultimately deliver significant co-benefits to all communities.

Many aspects of consumer decisions and business actions will shape the strategies in this Blueprint, and the strategies themselves will continue to be influenced by evolving macroeconomic trends, technological progress, behavioral changes, and other factors. Therefore, this Blueprint should not be viewed as static. To effectively address the climate crisis, we must be able to adjust course and act quickly to meet the decarbonization goals outlined here. With the resources available in the BIL and the IRA, a path to achieving our climate goals and avoiding climate catastrophe is clearer than ever. But realizing these goals and doing so in a way that maximizes equity and environmental justice will require careful planning and decisive coordinated actions. Our agencies are committed to meeting our nation's goals, and we call on other stakeholders to help us. **Success will require unprecedented coordination among every level of government, private industry, community-based organizations, stakeholder groups, and all Americans**. Decarbonizing our transportation sector *is* achievable, and the benefits will improve the lives of Americans for generations to come.

The time to act is now.

TO EFFECTIVELY ADDRESS THE CLIMATE CRISIS

we must be able to adjust course and act quickly to meet the decarbonization goals outlined here.

THE BIPARTISAN INFRASTRUCTURE LAW AND INFLATION REDUCTION ACT

On November 15, 2021, President Biden signed the Infrastructure Investment and Jobs Act, also known as the Bipartisan Infrastructure Law (BIL), into law. The BIL is the first infrastructure law in U.S. history that acknowledges and addresses the climate crisis and has a dedicated climate title, and it invests $660 billion into transportation systems and technologies over five years. On August 16, 2022, President Biden signed the Inflation Reduction Act (IRA) into law, representing the most aggressive action on tackling the climate crisis in U.S. history.

Together, the BIL and IRA represent a once-in-a-generation investment in infrastructure, technology, and supply chains, giving us an opportunity to guide our economy toward safer, more sustainable actions than ever before. Combined, these laws are projected to lower economy-wide emissions more than 40% by 2030, relative to 2005 levels, positioning us to achieve the goal of a 50-52% emissions reduction by the end of the decade REF, REF. In the transportation sector, these investments include historic levels of funding for transit, rail, and active transportation, buildouts of EV charging and sustainable fuel infrastructure, new and improved clean vehicle and fuels tax credits, sustainable aviation fuel tax credits, rebates for clean school buses and trucks, clean ports, investments along the EV and battery supply chains, and more. While BIL and IRA equip us with many of the appropriate tools for decarbonizing the transportation sector, implementation will be critical.

By 2030, BIL and IRA will drive substantial adoption of new zero-emission vehicles and sustainable fuels and support large-scale GHG emissions reductions. The degree of impact will also depend on choices made by regional, state, local, and Tribal recipients of BIL funding, as well as market evolution and technology development and deployment by the private sector. We intend to closely collaborate with the entities involved. Achieving our climate goals will not only require implementing the BIL and IRA to maximize their decarbonization, equity, and other benefits, but also taking action beyond these pieces of legislation, as identified in the MOU and this Blueprint.

1. INTRODUCTION

"In the United States and around the world, we are already feeling the impacts of a changing climate. Here at home, in 2021 alone we have seen historic droughts and wildfires in the West, unprecedented storms and flooding in the Southeast, and record heatwaves across the country. We see the same devastating evidence around the world in places like the fire-ravaged Amazon, the sweltering urban center of Delhi, and the shrinking coastlines of island nations like Tuvalu. The science is clear: we are headed toward climate disaster unless we achieve net-zero global emissions by midcentury. We also know this crisis presents vast opportunities to build a better economy, create millions of good-paying jobs, clean our waters and air, and ensure all Americans can live healthier, safer, stronger lives."

The Long-Term Strategy of the United States, November 2021

A. CONTEXT & VISION

In November 2021, the Biden-Harris administration published *The Long-Term Strategy (LTS) of the United States*, a visionary climate strategy that outlines a plan to tackle the growing climate crisis by decarbonizing our national economy. The LTS established a goal of net-zero GHG emissions by no later than 2050 with an interim, near-term milestone of a 50–52% reduction from 2005 levels in economy-wide net GHGs by 2030. Addressing the climate crisis is critical for the long-term health and well-being of every resident of the United States and will require rapid, widespread, and major transformations of many complex systems that are closely intertwined with our economy and way of life. Achieving a net-zero-emissions economy by 2050 involves aggressive curbing of emissions from all sectors (see Figure 1), including transportation, which is now the largest source of U.S. GHGs—about a third of all domestic emissions. In the LTS, transportation emissions are projected to reduce by 80–100% by 2050.

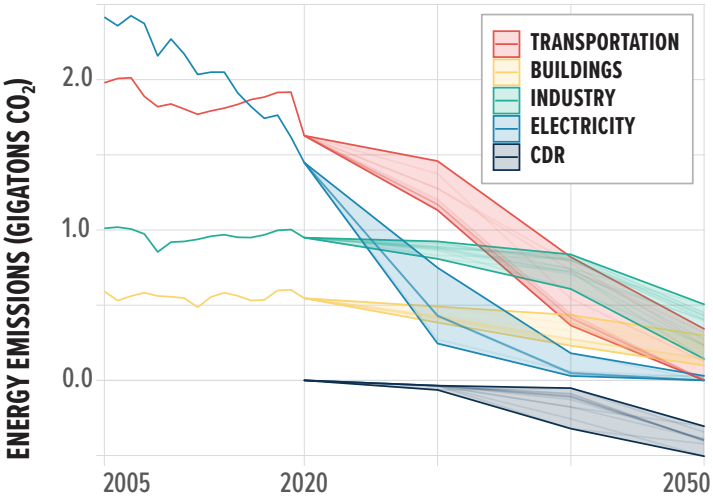


Figure 1. The path to economy-wide decarbonization entails electricity emissions and emissions from transportation, buildings, and industry falling dramatically in all scenarios, with the greatest reductions coming from electricity, followed by transportation, and growth in non-land sink carbon dioxide removals (Source: LTS).

The rising temperatures and increases in wildfires, droughts, and severe weather that are the direct impacts of climate change are already stressing the nation's transportation system. The results over the past few years are evident, for example, in the sections of California's Highway 1 that collapsed into the ocean

and forced officials to close the highway for more than a year and in the increased flooding in the New York City subway system. In Alaska, melting permafrost has buckled roads and bridges in areas that were previously frozen year-round. Flooding in the Gulf Coast halted rail service after Hurricane Harvey, and floods in Michigan shut down metropolitan highways for days. In Texas, a deadly ice storm led to several fatalities on I-35, while wildfires in California burned nearly 4,000 structures and mudslides in Colorado stranded more than 100 motorists overnight. Heat waves in the Pacific Northwest melted streetcar power cables in Portland. Deadly floods have occurred in eastern Kentucky, and hurricane winds knocked out power in all of Puerto Rico. Florida experienced its deadliest hurricane since the 1930s.

Without successfully decarbonizing the economy and fortifying the nation's infrastructure, impacts of climate change are projected to worsen and yield a substantial cost of *in*action, potentially up to $2 trillion annually or 10% of gross domestic product (GDP) by the end of the century [REF]. The urgency is high, and the time to act is now. Transforming our transportation system, while challenging, is possible with a dedicated, coordinated effort. Doing so provides an unprecedented opportunity to tackle climate change, while improving quality of life; making mobility safer and more affordable; and creating vibrant, sustainable, healthy, resilient, and equitable communities.

In response to the urgency of the moment, the Department of Energy (DOE), the Department of Transportation (DOT), the Environmental Protection Agency (EPA), and the Department of Housing and Urban Development (HUD) are coordinating actions toward a decarbonized sustainable transportation future, starting with a memorandum of understanding (MOU) and this Blueprint. These agencies directly influence transportation decisions through policy, regulation, collaboration, and investments in innovation

The urgency is high, and the time to act is now. Transforming our transportation system, while challenging, is possible with a dedicated, coordinated effort.

and RD&D of new technologies and infrastructure. **This Blueprint is the first comprehensive, whole-of-government approach to decarbonizing the transportation sector that aligns decision-making among agencies and identifies new and innovative opportunities for collaboration that are critical to achieving our shared vision of a future decarbonized transportation system**. The agencies provide guiding principles and strategies described here to shape future federal policies and actions direct the development and implementation of practical and effective pathways for all four agencies and our partners. This document will serve as a guide for other stakeholders, including other government agencies, local communities, the private sector, and philanthropic organizations, providing a united and consistent message on decarbonizing the transportation sector.

The Blueprint builds on and complements the LTS, which serves as a guidepost to determine the pathways for transportation, as part of a broader, U.S. economy-wide solution to the climate crisis. Following the Blueprint's release, the agencies will publish addenda detailing specific actions that each agency can take to enable and accelerate decarbonization across all transport modes and fuels. This Blueprint, and the addenda that will follow, are the beginning of a process that will continue to evolve over time. Consumer decisions, business actions, and evolving macroeconomic trends will shape the implementation of these strategies. To effectively address the climate crisis, we must be able to adjust course and act quickly to meet our goals through the decarbonization pathways outlined here.

B. PLAN & STRATEGY

The emissions from transportation are the result of three interrelated factors, all of which must be addressed to achieve significant emissions reductions, while yielding significant co-benefits and advancing equity:

1. **Transportation system design and land use** – Homes, workplaces, and services are often located far apart from one another. When people have limited transportation choices, or less accessible and efficient options, it can take them even more time to address their daily needs. The spatial mismatch between jobs, housing, and services is especially pronounced in disadvantaged communities.
2. **Vehicle and engine efficiency** – While vehicle efficiency has improved greatly over the last several decades, further improvements are needed to meet decarbonization goals.
3. **High-GHG fuels** – Petroleum provides nearly all energy used in transportation today. This reliance on petroleum is a major energy security concern and driver of transportation emissions.

Decarbonizing the transportation sector will require strategies and actions that approach the problem from all angles. Working with local partners to enhance land-use planning and coordinate public and private sector investments will tackle the problem at the root and make it possible for people to take fewer or shorter trips, or make it easier to walk and bike on those trips. This will both improve equity and provide better access to goods and services with less travel required for rural, suburban, and urban communities. Investments in passenger rail, public transportation, and active transportation infrastructure will give people the option to use more energy-efficient forms of transportation. And, thanks to significant strides in research and innovation, the technologies to decarbonize most transportation systems are within sight and offer realistic and viable pathways to replace fossil fuels with sustainable solutions.

This Blueprint focuses on continued, coordinated RD&D and deployment efforts from multiple stakeholders to enable widespread and equitable deployment of solutions that are viable, affordable, and that have sufficient resources to scale. It also allows for the development of missing solutions via innovation and demonstration. We identify several enabling catalysts, such as policies that encourage increased convenience in our communities, transit and efficient mobility, vehicle

Achieving meaningful reductions in emissions this decade is essential in reaching the near-term emissions reductions goals and enabling a pathway to reach net-zero emissions economy-wide by 2050.

electrification, and availability of sustainable fuels. We can pair these actions with continued growth in research and technology deployment and coordination with the wide-ranging community to shape our transportation future. This will allow the United States to achieve our ambitious climate goals and improve lives. **We envision a future mobility system that is clean, safe, secure, accessible, affordable, and equitable, and provides decarbonized transportation options for people and goods.**

Achieving this vision will require actionable strategies that result in a major transformation of how people and goods move in the United States, including the modes of travel chosen and the fuels used. **This transformation is already underway, and consumers and businesses have started to adopt new clean technologies, but the trend needs to accelerate dramatically both in scale and scope. It is essential to make meaningful reductions in emissions this decade to reach near-term emissions reductions goals and enable a pathway to reach net-zero-emissions economy-wide by 2050.**

The strategies outlined in this Blueprint emphasize existing commercially available solutions or technologies that are currently under advanced development and can be deployed in the near term. Additional RD&D will be needed to further improve certain solutions and reduce costs, but progress and demonstration are well underway. Some of these solutions will result in immediate emissions reductions while others will require a longer time to implement, with impacts that will be observed over the decades to come. We must act now to implement near-term and longer-term solutions that reduce GHG emissions from transportation.

Accordingly, this Blueprint's vision will guide and inform agencies' policy and decision-making across a wide range of activities, including regulatory standard development, infrastructure investments, grants and technical assistance, research and innovation, evaluation, and deployment. This Blueprint can also serve to guide other decision-makers, including federal, regional, state, local, and Tribal governments; the private sector, academia, and community-based organizations; and non-profit, grassroots, and philanthropic organizations toward decarbonized transportation solutions. Our vision for a transformed transportation sector not only minimizes GHG and pollutant emissions but also ensures improvements towards a safe, affordable, and equitable system that provides better access to clean transportation options for all communities. Transportation systems must support resilience to the impacts of climate change, create new domestic jobs and economic opportunities, bring co-benefits to communities, and position the United States to lead the global race to clean energy and transportation technologies adoption.

ENVIRONMENTAL JUSTICE AND EQUITY

The benefits and costs of transportation systems in the United States have historically been unequally distributed. American transportation systems have disproportionally impacted underserved or overburdened communities REF, REF. Low- and medium-income and minority households tend to have less access to personal vehicles and fewer transportation options that connect them to housing, employment centers and other services and amenities. Historical underfunding of public transportation has deprioritized or neglected enhancements in public transportation quality in the communities that need it most, leading to longer travel times and constrained mobility options. These communities are often underfunded in other infrastructure areas, including sidewalks, bike lanes, and EV chargers, further constraining residents' transportation options.

Communities that are overburdened and historically underserved are also exposed to a disproportionate amount of air pollution and environmental hazards, including the release of toxic pollutants from petroleum refineries and petrochemical facilities, which exacerbates existing health and economic inequities. Additionally, **the financial burden of transportation as a percentage of income is almost three-times higher for households in the bottom income quintile compared to the top quintile** REF.

These disproportionate impacts are reinforced by a long history of federal, state, and local policies that have shaped our transportation system. In many cities and towns, exclusionary practices such as redlining and other discriminatory housing policies led to racially segregated neighborhoods, with areas with predominantly minority populations tending to suffer from chronic underinvestment. While investments in amenities were disproportionately directed to wealthier areas, highways were in many cases intentionally routed through existing neighborhoods, damaging the character and economies of those communities, and affecting the wellbeing of residents due to long-lasting effects from worsened air quality, increased heat and noise pollution, and physical barriers to opportunity and mobility.

In some places, housing policies and land-use decisions have reinforced the transportation barriers.[4] For example, disjointed housing and transportation policies over the past decades have impeded access to safe and reliable transportation options and hindered travel to critical destinations—including work, schools, grocery stores, and health care facilities—leading to increased transportation and housing cost burdens.[5] Further, many communities' land-use codes or development processes have failed to provide sufficient affordable housing, thereby excluding low-income and moderate-income residents. In many instances, these communities can lift exclusionary barriers, invest more in affordable housing, and link those investments to enhancements in public transportation and a viable mix of travel options.[6] Additionally, communities of color have often been passed over for infrastructure wealth-creation opportunities such as jobs, careers, and the use of minority-owned contractors.

The federal government is committed to the Justice40 initiative, which establishes the goal that at least 40% of the benefits of certain federal investments flow to disadvantaged communities REF. As investments in cleaner transportation solutions increase, it will be important to ensure that disadvantaged communities reap the benefit of those investments, including jobs and business opportunities. It will be necessary to balance community priorities as potential federal investments are considered. Strategies should avoid resident displacement and address the need for quality affordable housing near transit or other affordable and convenient transportation options. Federal investments in the clean energy economy can lead to decreased consumer costs, increased access to clean transportation, improved public health, new business and workforce opportunities, and enhanced community resiliency REF. Meaningful public involvement is critical to realize these goals, including early and proactive discussions with communities to develop plans and programs. Decarbonizing the transportation sector while addressing equity will be key to ensuring our future transportation infrastructure results in better outcomes for everyone, particularly residents of disadvantaged communities.

[4] Ewing, Reid, Rolf Pendall, and Don Chen. "Measuring sprawl and its transportation impacts." *Transportation research record* 1831.1 (2003): 175-183.
Howell, Amanda, et al. "Transportation impacts of affordable housing." *Journal of Transport and Land Use* 11.1 (2018): 103-118.

[5] Rothstein, R. (2018). *The color of law*. Liveright Publishing Corporation.

[6] Van Wee, Bert. "Land use and transport: research and policy challenges." *Journal of transport geography* 10.4 (2002): 259-271.; Litman, Todd. "Evaluating transportation land use impacts." (2008).

Achieving a net-zero economy by 2050 will require major transformations across all sectors and effective integration between them. The *Inventory of U.S. Greenhouse Gas Emissions and Sinks*, which EPA publishes annually, provides detailed accounting of GHG emissions across the U.S. economy [REF]. The sources of GHG emissions for 2019 are shown in Figure 2, along with additional detail for the transportation sector.[7] This Blueprint focuses on reducing emissions from the use phase of the transportation sector (the blue slice in Figure 2). Analyses throughout this Blueprint will use 2019 as a baseline, as impacts due to the COVID-19 pandemic complicate the use of later data.

2019 U.S. GHG EMISSIONS

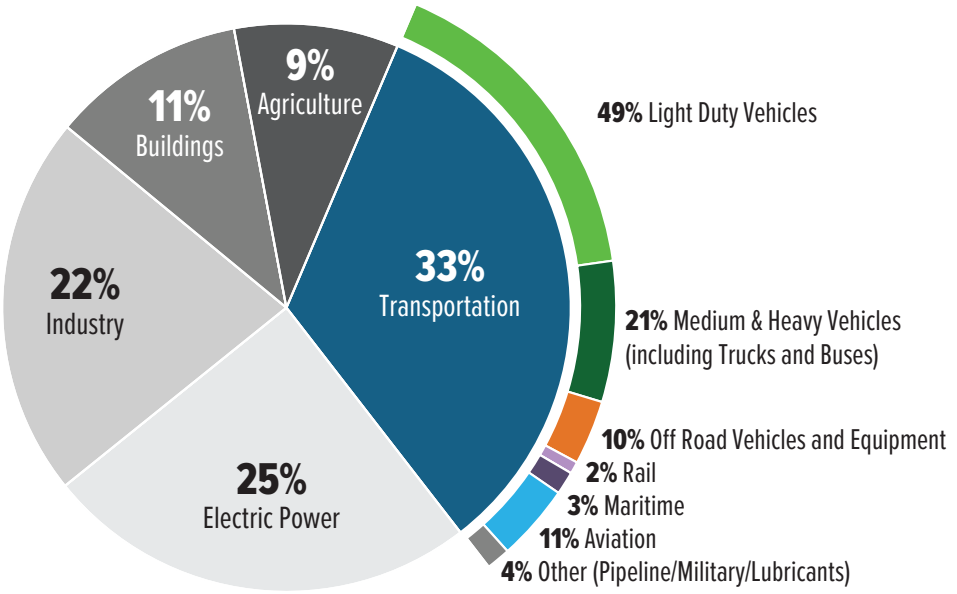


Figure 2. Total 2019 U.S. GHG emissions with transportation and mobile sources breakdown. Data derived from the EPA Inventory of U.S. Greenhouse Gas Emissions and Sinks [REF].[8] This Blueprint uses 2019 as a baseline since impacts due to COVID-19 complicate the use of later data.

Transportation is closely interconnected with other sectors of the economy. For example, EVs rely on electricity generation and will have different implications for manufacturing relative to manufacturing of internal combustion engine vehicles. Specific strategies to reduce full life-cycle emissions associated with transportation activities are not addressed in this document, but they are needed to achieve a decarbonized economy. They are the focus of other government-wide initiatives that will affect this Blueprint's implementation.

[7] The U.S. Greenhouse Gas Emissions and Sinks report shows transportation as responsible for 29% of all U.S. emissions in 2019. Figure 2 includes mobile source emissions in the off-road category and fuels for international travel which are included elsewhere in the GHG Inventory report. For further discussion of what is included in each specific sector, see the Inventory of U.S. Greenhouse Gas Emissions and Sinks report, and section 3 of this report.

[8] The off-road vehicles and equipment category in Figure 2 includes some mobile source emissions that are reported in the U.S. GHG Inventory report as part of the Commercial and Industrial sectors. Figure 2 also includes international maritime and aviation fuels.

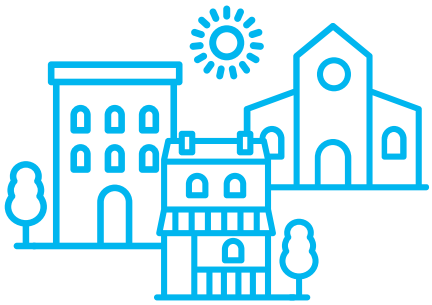
LIFE-CYCLE EMISSIONS AND EMBODIED CARBON

This Blueprint focuses on the direct transportation emissions from the use phase of transportation vehicles and systems, but our vision considers full life-cycle emissions reductions and recognizes that the transportation sector also induces additional GHG emissions from the production and end-of-life phases. These include GHG emissions from fuel production and processing; vehicle manufacturing and disposal; and construction, maintenance, and disposal of transportation infrastructure. Transportation systems contribute to climate pollution at a variety of points and full life-cycle transportation GHG emissions need to be considered and addressed. The carbon emissions from the full life-cycle of a product or service—often referred to as "embodied carbon"—are significant, although they are not included in the 33% of economy-wide emissions attributed to the transportation sector in Figure 2. Decarbonizing those sectors of our economy is the focus of other government-wide initiatives that complement this Blueprint. In particular, many transportation decarbonization solutions rely on electricity directly or indirectly (such as the production of hydrogen or certain sustainable fuels). Achieving 100% clean electricity by 2035, largely through new solar and wind energy development, will be a critical co-strategy to support transportation decarbonization REF.

For example, according to America's Cement Manufacturers, over the next five years, spending from the BIL alone will result in the use of 18.63 million metric tons (MMT) of cement for roads and bridges, 5.78 MMT for airports, 2.99 MMT for ports and waterways, and 0.31 MMT for rail and transit. About 0.5-0.6 tons of carbon dioxide (CO_2) is emitted per ton of cement produced, so cement used in projects funded by the BIL will result in about 15.2 MMT of CO_2 emissions REF, REF. This is equivalent to the emissions from about 3.3 million gasoline-powered vehicles driving for a year. Reaching the goal of net-zero GHG emissions by 2050 requires addressing the GHG emissions associated with the production and end-of-life phases of fuels, vehicles, and transportation infrastructure and systems, both directly through procuring lower-carbon materials and indirectly by employing more sustainable construction practices, including leveraging digitalization and e-construction.

This Blueprint provides a comprehensive, system-level perspective covering the entire transportation sector across all passenger and freight travel modes and fuels, and lays out a three-pronged strategy for a transition to a sustainable transportation future, all centered around providing better options to **increase convenience, improve efficiency, and transition to clean options:**

1

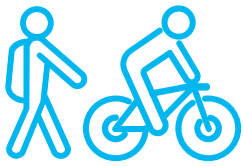


INCREASE CONVENIENCE

by supporting community design and land-use planning at the local or regional level that ensure that job centers, shopping, schools, entertainment, and essential services are strategically located near where people live to reduce commute burdens, improve walkability and bikeability, and improve quality of life…

…Because every hour we don't spend sitting in traffic is an hour we can spend focused on the things and the people we love, all while reducing GHG emissions.

2

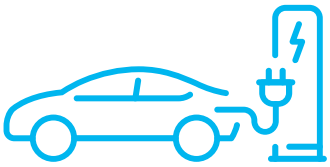


IMPROVE EFFICIENCY

by expanding affordable, accessible, efficient, and reliable options like public transportation and rail, and improving the efficiency of all vehicles…

…Because everyone deserves efficient transportation options that will allow them to move around affordably and safely, and because consuming less energy as we move saves money, strengthens our national security, and reduces GHG emissions.

3



TRANSITION TO CLEAN OPTIONS

by deploying zero-emission vehicles and fuels for cars, commercial trucks, transit, boats, airplanes, and more…

…Because no one should be exposed to air pollution in their community or on their ride to school or work and eliminating GHG emissions from transportation is imperative to tackle the climate crisis.

Coordination of effort across all three of these areas will be necessary to achieve our long-term goals.

It is essential to implement design solutions that increase convenience, provide better access to clean modes of travel, and support demand management policies that make it easier and more convenient to choose more efficient travel options.

These solutions, which may take time to implement, will provide critical co-benefits such as improved safety and quality of life, and while they are not sufficient to reach our net-zero goals, they are essential to offsetting expected increase in travel demand driven by population and economic growth. It will also be important to improve system and vehicle efficiency, while supporting greater use of more efficient travel modes such as rail and transit. Absent solutions to increase convenience and improve efficiency, we will see the undesirable outcomes of travel amplified—more and longer trips needed to support day-to-day activities; long hours spent sitting in traffic on the daily commute; and higher expenses for gasoline, vehicle maintenance, and other costs.

A transition to clean options that involves the rapid and widespread deployment of clean vehicle and fuel technologies is critical to achieving deep emissions reductions by mid-century. Agency-led efforts are crucial to tying these strategies to necessary policies and partnerships and to further incentivize innovation where it is most needed to accelerate the pace of deployment. Collaboratively focusing on solutions ranging from system-level design integrations to investments in new technologies will allow all Americans to benefit from improved mobility options in the equitable and decarbonized transportation sector of the future.

2. A WHOLE-OF-GOVERNMENT APPROACH

The MOU between DOE, DOT, EPA, and HUD represents a historic step toward a collaborative approach to decarbonizing transportation. Each of the agencies has access to a unique set of tools, knowledge, and partnerships.

This Blueprint recognizes these proficiencies and evaluates how they can be applied collectively to achieve transportation decarbonization goals faster and more efficiently than any agency could alone. This collaboration can serve as the basis for further cooperation on decarbonization with other federal agencies; regional, state, local, and Tribal governments; private industry; academia; community-based organizations; non-profits; and philanthropic groups. This section highlights how the four agencies will work together and with our external partners to ensure these ambitious but attainable decarbonization goals are achieved.

A. THE AGENCIES

Each of the four agencies engages in extensive efforts related to transportation, and our fundamentally distinct missions shape our actions:

DOE: The Department of Energy, in partnership with our National Laboratories, strengthens the nation's prosperity and security by addressing energy, environmental, climate, and nuclear challenges through transformative science, technology, and infrastructure solutions. This includes RD&D and deployment of a wide array of sustainable technologies and solutions to make transportation and other sectors cleaner and more efficient.

DOT: The Department of Transportation seeks to transform the nation's transportation system to make it safer, more accessible, more reliable, and multimodal; to increase economic strength; improve climate and equity outcomes; and build global competitiveness for the American people. To achieve these goals, DOT provides funding to regional, state, local, and Tribal governments and other entities to invest in transportation infrastructure, accelerate electric vehicle deployment, and support mobility options across all modes of transportation. DOT has a number of regulatory and policy levers, such as fuel economy standards, that it can use to help reduce emissions in the transportation sector. DOT also supports extensive RD&D deployment and innovation initiatives.

EPA: The Environmental Protection Agency's mission is to protect human health and the environment. As part of this mission, EPA is responsible for numerous regulatory, partnership, and funding programs that seek to reduce air pollutants, air toxics, and GHG emissions from across the transportation sector. EPA provides modeling tools, policy analysis, technical assistance, and public information—such as the fuel economy and emissions labels on all new vehicles. EPA has a strong focus on environmental justice and equity and supports community-led action to clean up environmental hazards, create new economic opportunities, and support equitable revitalization.

HUD: The Department of Housing and Urban Development's mission is to create strong, sustainable, inclusive communities and quality affordable homes for all. Central to this mission is supporting location-efficient housing investments that increase mobility options for low- and moderate-income households; promote economic development; lower combined housing-transportation as well as utility expenditures; increase access to employment, schools, services, and amenities; and encourage equitable transit-oriented development.

As articulated in the MOU, the four agencies are committed to building a clean, safe, secure, accessible, affordable, equitable, and decarbonized transportation system for all. These goals are integral to the mission of our agencies and are aligned with the agencies' initiatives and strategic goals REF. The agencies will each be critical to reducing transportation emissions at the pace climate science demands, and our work cannot take place in silos. For decarbonization to be successful, close collaboration and sharing of best practices, research, policy ideas, and other resources are necessary. For example, the BIL created the Joint Office of Energy and Transportation (Joint Office), which combines expertise from DOE and DOT to tackle issues of mutual concern, including EV charging infrastructure deployment and technical assistance for programs such as EPA's Clean School Bus initiative.

Additionally, DOE, DOT, EPA, and HUD work with other federal agencies and regional, state, local, and Tribal entities to provide modeling tools, data, technical assistance, and public information. These and related efforts aim to ensure resources are being used efficiently and effectively to maximize impact and accelerate the transition to a sustainable, decarbonized transportation future.

B. GUIDING PRINCIPLES

The Blueprint's strategies are based on a set of **five guiding principles:**

- **Implement Bold Actions to Achieve Measurable Results:** Act upon the urgency of the climate crisis and seize the critical opportunity to improve lives by prioritizing efforts that measurably and rapidly reduce GHG emissions and improve health outcomes, especially for overburdened communities.
- **Embrace Creative Solutions Across the Entire Transportation System:** Evaluate a broad set of solutions to reduce emissions, including improved land-use planning; infrastructure investments; and new policies, technologies, and business models that support clean modes of travel and zero-emission vehicles (including battery electric, plug-in hybrid electric, and hydrogen fuel cell EVs) for both passengers and freight.
- **Ensure Safety, Equity, and Access:** Focus on approaches that prioritize safety; include community engagement; address consumer needs and reduce emissions; expand accessibility and affordability of travel; distribute benefits more equitably and address disproportionate burdens; enhance infrastructure resiliency to a changing climate; and improve quality of life, health outcomes, and economic opportunity, particularly in overburdened and historically underserved communities.
- **Increase Collaboration:** Create and support collaborative programs that leverage the combined expertise of DOE, DOT, EPA, HUD, and other federal partners, and expand the federal government's partnerships with regional, state, local, and Tribal governments; private industry; community-based organizations; and other stakeholders.

As articulated in the MOU, the four agencies are committed to building a clean, safe, secure, accessible, affordable, equitable, and decarbonized transportation system for all. These goals are integral to the mission of our agencies and are aligned with the agencies' initiatives and strategic goals.

- **Establish U.S. Leadership:** Position the U.S. to lead the global race to clean transportation solutions, creating well-paying domestic jobs, strengthening U.S. energy independence and security, and developing robust and sustainable new domestic and international supply chains for clean transportation technologies.

C. THE LEVERS

The agencies intend to work collaboratively and with external partners to ensure we are using all tools at our disposal to decarbonize the transportation sector. These tools include numerous levers that the agencies can jointly pursue to enable and support a transition to a sustainable transportation future consistent with the Biden-Harris administration's 2030 and 2050 GHG reduction goals, thus avoiding the worst climate outcomes. These levers fall into the six general categories described below. By defining these levers, the agencies will identify potential for new research, collaboration, and opportunities to reduce GHG emissions from transportation.

Achieving meaningful reductions in emissions this decade is essential in reaching the near-term emissions reductions goals by 2050.

- **Policy and Regulation:** The federal government, along with regional, state, local, and Tribal governments, can use a variety of policy and regulatory levers to help enable transportation sector decarbonization. These levers can support the transition to zero-emission vehicles and fuels, enable access to clean transportation options, improve the efficiency of systems and vehicles, and support increased production of sustainable fuels. Policies and regulations may include, but are not limited to: market incentives (e.g., vehicle purchase credits or production tax credits for sustainable fuels); GHG and fuel economy standards; infrastructure compatibility standards; prioritization of zero-emission transportation projects in discretionary grant programs; transit-oriented development policies to support reliable, frequent, and affordable public transportation services; transportation-demand management programs (e.g., rideshare and vanpool programs, employer-based trip reduction programs); investments in walking and biking infrastructure; transportation planning; and programming processes and procurement. Economy-wide policies, such as carbon pricing, sustainable fuel standards, or renewable fuel standards, would also affect carbon reduction efforts.

- **Infrastructure, Industrial Investments, and Financing:** Investments in infrastructure are critical to enable decarbonization, including supporting a transition to zero-emission vehicles, the production and delivery of sustainable fuels, and operational improvements through travel demand management. Investments in these areas are crucial and will encompass projects that help spur

mode shift and all its benefits, including increasing the share of trips made using low- to no-carbon travel options. Example areas for financing are:

- Battery EV charging infrastructure for all on-road vehicles and other applications of battery technologies and other zero-emission fueling infrastructure for rail, off-road, maritime, and aviation, as well as grid transformation and upgrades to enable transportation electrification.
- Manufacturing of zero-emission vehicles, batteries, fuel cells, and production of sustainable fuels such as hydrogen and sustainable biofuels, including industrial investments to strengthen supply chains and improve access to critical minerals.
- Transit and rail, for building new systems and expanding service on existing systems.
- Safe infrastructure for active transportation options like walking and biking and shared micromobility options such as scooters and e-bikes.
- A fix-it-first-and-fix-it-right approach to road and bridge investments, that prioritizes repairing and modernizing existing roadways before expanding capacity.
- Smart planning and improved system operations, innovative uses of the transportation right-of-way, such as siting renewable energy technologies on highway or rail properties), and other cross-sector strategies.
- Accelerating the transition to zero-emissions vehicle and engine technologies.

The BIL and the IRA's historic investments in clean transportation options and infrastructure demonstrate the role of the federal government and how those investments can be used to enable a

Achieving meaningful reductions in emissions this decade is essential in reaching the near-term emissions reductions goals and enabling a pathway to reach net-zero emissions economy-wide by 2050.

path toward deep decarbonization economy-wide, especially in transportation (see textbox on page 11).

- **Research and Innovation:** Innovation in clean technologies is critical to achieve our climate goals and will support both economic growth and the creation of well-paying jobs. Markets alone will not accelerate the energy transition at a sufficient pace or scale to address the climate crisis, and the federal government has an integral role to play to catalyze the private sector into actions to ensure that the U.S. economy is competitive [REF]. Reducing the cost of clean transportation options will be required to drive the scale of adoption needed for sector-wide decarbonization, as well as to achieve market pull to accelerate adoption. In particular, our agencies—in close collaboration with DOE National Laboratories—should strategically advance RD&D and deployment to improve performance and reduce costs of clean energy solutions and support the development of new and higher-risk (but potentially higher-reward) technologies collaboratively with the private sector while also leveraging universities, non-profits, and philanthropic organizations.

The interagency Climate Innovation Working Group launched in February of 2021 will also help drive innovation. It works to identify, prioritize, and accelerate innovation in game-changing net-zero technologies. The working group has identified 37 net-zero RD&D and deployment opportunities and prioritized five areas to launch the Net-Zero Game Changers initiative, including net-zero aviation and net-zero power grid and electrification REF.

The private sector, with incentives from the BIL and IRA, can focus resources on scaling and commercializing technology solutions that drive decarbonization. RD&D and deployment should focus on all stages of the innovation spectrum and support a wide array of solutions. Although some aspects of our future transportation systems, mobility needs, and available technologies remain uncertain, the federal government, regional, state, local, and Tribal governments, the private sector, and other stakeholders are investing to develop the talents and solutions necessary to ensure a sustainable transportation future. Alignment of research and policy workstreams across our agencies will be critical to ensure research and innovation efforts inform commercially deployable technologies and that research efforts can target and address identified gaps.

- **Data and Analytic Tools:** The public and decision-makers need accurate and accessible information to understand the benefits of clean mobility options, such as improvements to air quality, heath, and quality of life, and their implications for the rest of the energy systems and the economy. Timely and reliable data and analytic tools are critical to inform and guide decisions by consumers and others, ensure equitable outcomes, and adjust course during this monumental transition.

- **Workforce Education, and Training:** As the country transitions to a clean energy economy, there are tremendous opportunities to create new, well-paying jobs. These jobs can provide meaningful economic prospects for all people, including former fossil fuel industry workers and residents of disadvantaged communities. Building a diverse and well-trained clean energy workforce is critical to developing a successful clean energy economy, including in the transportation sector. To create that workforce, all levels of government and the private sector should invest in high-quality training and education programs connected to well-paying jobs. Such programs may include pre-apprenticeships and apprenticeships. A strong clean energy and transportation workforce can help create an economy that benefits everyone.

- **Stakeholder Engagement and Public-Private Partnerships:** Engagement and partnerships with local and international governments, the private sector, and other stakeholders is critical to

achieving decarbonization. All levels of government and the private sector should align their efforts to enact solutions through technical assistance and collaborative work. Partnering with the private sector to accelerate climate-focused research and innovation is also critical. Further, it will be essential to work alongside labor unions and other community stakeholders to ensure the transition to a decarbonized transportation sector empowers and improves the lives of everyone. The federal government must provide leadership, set the course, and provide long-term confidence and stability during the global transition from fossil fuels. Achieving near- and long-term energy and climate goals will require building consensus among different stakeholders and coordinated action.

The goal of this Blueprint is to illustrate how domestic actions within the above levers can be catalyzed. However, many of the same actors and solutions that have a role in decarbonizing the U.S. transportation sector are also critical in supporting decarbonization abroad. Many of the companies that will deploy decarbonization solutions are global. It is therefore vital to share and seek best practices with stakeholders abroad and to consider other available levers internationally to support global decarbonization.

3. TRANSPORTATION CHALLENGES TODAY

A. CURRENT STATUS

In 2017, the transportation sector surpassed the electric power sector to become the largest direct source of U.S. GHG emissions. Transportation emissions increased 22% between 1990 and 2019, largely due to increased vehicle miles traveled REF. After a reduction in transportation emissions during the COVID-19 pandemic, transportation demand has returned to near pre-pandemic levels and is projected to continue growing REF, REF. While U.S. transportation emissions increased between 1990 and 2019, emissions from the electric power sector fell by more than 12% over the same period and by more than 30% between 2007 and 2019 REF. Emissions from the electric power sector continue to fall as power generation has rapidly moved toward wind, solar, and natural gas sources, and away from coal REF.

As shown in Figure 2, light-duty vehicles, including passenger cars, SUVs, pickup trucks, and motorcycles, are responsible for about half of all U.S. transportation GHG emissions, as reported in the *Inventory of U.S. Greenhouse Gas Emissions and Sinks*. The evolution of vehicle design and use over the last decades has shaped light-duty vehicle (LDV) emissions. Between the late 1980s and 2004, technology progress allowed for increase in vehicle weight and power, while fuel economy remained essentially flat. Since 2004, average new vehicle fuel economy has increased 32%, but horsepower has also increased 20%, and weight has increased 4%, which has offset some of the potential fuel economy gains. The percentage of all new vehicles classified as trucks under DOT and EPA regulations used to be less than 40%, but has steadily grown, reaching 63% in model year 2021 driven mostly by the adoption of SUVs REF, REF. Increasing annual miles traveled and the preference for larger, less fuel-efficient vehicles are two long-running trends that have significantly contributed to light-duty vehicles emissions and will make decarbonization more challenging.

Medium- and heavy-duty vehicles (MHDVs) are the second-largest contributor to transportation GHG emissions, at 21% of all emissions. This diverse category of vehicles includes larger pickup trucks, delivery and work vans, refuse collection vehicles, buses, and heavy trucks. Aviation is the third largest contributor to transportation GHG emissions, at 11%. Aviation emissions include fuel used for all domestic flights and for aircraft taking off from the U.S. on international flights. Emissions from off-road vehicles and equipment are responsible for an additional 10% of U.S. transportation GHG emissions, including vehicles used for agricultural, mining, construction, and other mobile sources of emissions.[9] Maritime activities, including shipping and recreational boating, account for 3% of transportation GHG emissions, and rail transport is responsible for 2%. The final 4% of U.S. transportation sector GHG emissions is from the operation of pipelines, emissions created from the use of lubricants (due to combustion during use or disposal), and domestic military aviation activities.[10] The impacts of lubricants and domestic military activity are not further explored in this Blueprint.

GHGs emitted from transportation sources during vehicle use are predominantly (more than 97%) in the form of CO_2 released as a byproduct of combusting

[9] The off-road vehicles and equipment category in Figure 2 includes some mobile source emissions that are reported in the U.S. GHG Inventory report as part of the Commercial and Industrial sectors.
[10] For more detailed definitions of what is included in each specific sector, see the *Inventory of U.S. Greenhouse Gas Emissions and Sinks* reports.

fossil fuels and biofuels. Combustion processes also create smaller amounts of methane and nitrogen oxides (NOx), which are potent GHGs. Additionally, various hydrofluorocarbons used in vehicle air conditioners contribute to the overall GHG emissions from transportation. Aviation emits soot and induces cirrus cloudiness, which also contribute to aviation's global warming impact and is an active area of study.

The transportation sector depends heavily on petroleum fuels, and is responsible for more than 70% of the total U.S. petroleum consumption. More than 95% of transportation energy use comes from petroleum-based fuels, making it the least energy-diverse sector and subjecting the American economy to the volatility of global markets.

AIR QUALITY

In addition to GHG emissions, the transportation sector is responsible for other emissions that impact our environment and public health and that disproportionately affect disadvantaged communities. Transportation is responsible for about half of all U.S. emissions of NOx, as well as emissions of volatile organic compounds (VOCs), particulate matter, sulfur dioxide (SO_2), and various air toxics REF, REF. Air toxics are compounds such as benzene and formaldehyde that are known or suspected to cause cancer or other serious health and environmental effects. Most emissions from transportation are due to the combustion and evaporation of fossil fuels. Brake and tire wear are also significant sources of particulate emissions.

The health effects of air pollution affect millions of people, especially those who live near highways; ports; rail yards; or petroleum extraction, refinery, storage or transport infrastructure. These effects can include asthma, decreased lung function, cancer, and premature death. Children, older adults, people with preexisting cardiopulmonary disease, people of low socioeconomic status, and racial and ethnic minorities are among those at higher risk for health impacts from air pollution due to disproportionate exposure. Nationally, these impacts affect people of color disproportionately. For example, Black Americans are 40% more likely to have asthma and almost three times more likely to die from asthma-related causes than non-Hispanic white Americans REF.

Reducing emissions from the transportation system creates significant benefits to public health and welfare REF. On December 20, 2022, EPA adopted a final rule, "Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards," that sets stronger emissions standards to further reduce air pollution from heavy-duty vehicles and engines. That rule alone is projected by 2045 to reduce up to 2,900 premature deaths and 18,000 fewer cases of asthma in children annually REF, REF. Decarbonizing the transportation system will reduce air pollution and its associated health impacts. For example, transitioning to electric vehicles powered by clean electricity will eliminate tailpipe emissions and the associated air quality and health impacts.

B. CHANGING MOBILITY NEEDS

An effective strategy to reduce emissions from transportation must consider current and future mobility needs for both people and goods. Population and economic growth are fundamental forces shaping future mobility needs, as are the trends in personal travel and housing choices and opportunities, goods movement and delivery business models, and available transportation options.

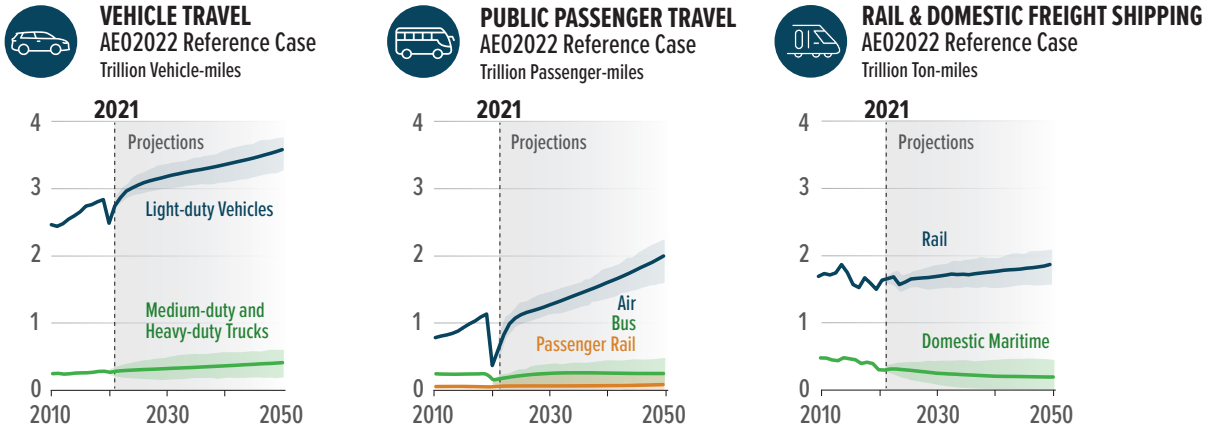


Figure 3. Passenger and freight demand projections from AEO 2022 with additional illustrative uncertainty bounds.

Projections for a business-as-usual reference scenario from the *Annual Energy Outlook 2022* (AEO), published by the U.S. Energy Information Administration, show a rebound in mobility demand to pre-pandemic levels and subsequent steady increase in vehicle miles traveled from light-duty and heavy-duty vehicles. This projection in light-duty vehicle travel demand is primarily driven by population growth, with per-capita miles traveled remaining relatively flat. Growth in heavy-duty vehicle travel demand is projected to be more significant, increasing by about 50% by 2050, mostly driven by projected economic growth and assumed relationships between GDP and freight demand. The AEO reference case also projects a significant increase in air travel, which is expected to almost double by 2050. Freight rail demand is also projected to grow, while domestic maritime operations are expected to decline slightly over time. These projections are based on assumed population growth of 0.4% per year and GDP growth of 2.2% per year from 2021 to 2050 [REF].

The AEO reference case is not intended to reflect a transformative future and does not account for major regulatory, policy, or technology changes. Instead, the AEO reference case represents a business-as-usual perspective with limited changes from the current systems and no behavioral, technological, or policy changes.

There is uncertainty regarding the extent to which travel demand is expected to grow in the future. The COVID-19 pandemic altered mobility and behavioral patterns related to how people travel and obtain goods and services. While the duration and long-term effects of these impacts are unknown, and travel has largely returned to pre-pandemic levels for most travel modes already, the pandemic has shown that rapid change can occur both in total transportation demand and how that demand is met. New services and transportation options have also been introduced into the marketplace in recent years. There has been explosive growth in e-commerce, for example, and options such as ride hailing services, scooters, and

Projections for a business-as-usual reference scenario from the *Annual Energy Outlook 2022* (AEO), published by the U.S. Energy Information Administration, show a rebound in mobility demand to pre-pandemic levels and subsequent steady increase in vehicle miles traveled from light-duty and heavy-duty vehicles.

e-bikes on shared platforms have all become part of the mobility fabric in a very short time. These disruptions of the status quo could cause, among other things, long-term shifts in mobility needs, commerce, and travel choices that will profoundly impact transportation systems and associated emissions. However, several other transportation energy sector issues have emerged since the economic recovery post-COVID-19, including a decline in the use of public transportation, congested freight transportation due to near record-high demands, and energy supply constraints due to the Russian invasion of Ukraine. These challenges in transitioning away from fossil fuels illustrate that aggressively decarbonizing transportation will serve the dual purpose of insulating the nation from the global energy and climate crises that America faces today.

Changing mobility needs and preferences create both challenges and opportunities looking forward. Policy and infrastructure investments at the federal, regional, state local, and Tribal levels, as well as other macroeconomic changes, new technologies, and behavioral drivers will influence future passenger and freight travel in major ways. While there is uncertainty in demand growth for future passenger and freight mobility, there is also an opportunity to help shape that future to provide more options to reduce vehicle miles traveled while increasing mobility options and accessibility, improving quality of life, and reducing emissions. Leveraging these opportunities can influence future travel demand and contribute to a more sustainable transportation future.

C. MOBILITY COSTS AND IMPACT OF FUEL PRICES

Transportation is currently the second-largest household expense in the U.S., with the average family spending more than $10,000 a year on transportation costs—almost 20% of the $60,574 average annual household expenditures [REF]. In 2019, owning and operating private vehicles accounted for more than 70% of the total transportation costs, and gasoline expenses represented another 21% (see Figure 4). In the same year, public transportation accounted for 7% of total transportation costs [REF]. The cost of transportation is a significant expense for many families, particularly for those in overburdened communities. In addition, the price volatility of gasoline and diesel fuels has contributed to economic uncertainty for families and businesses alike.

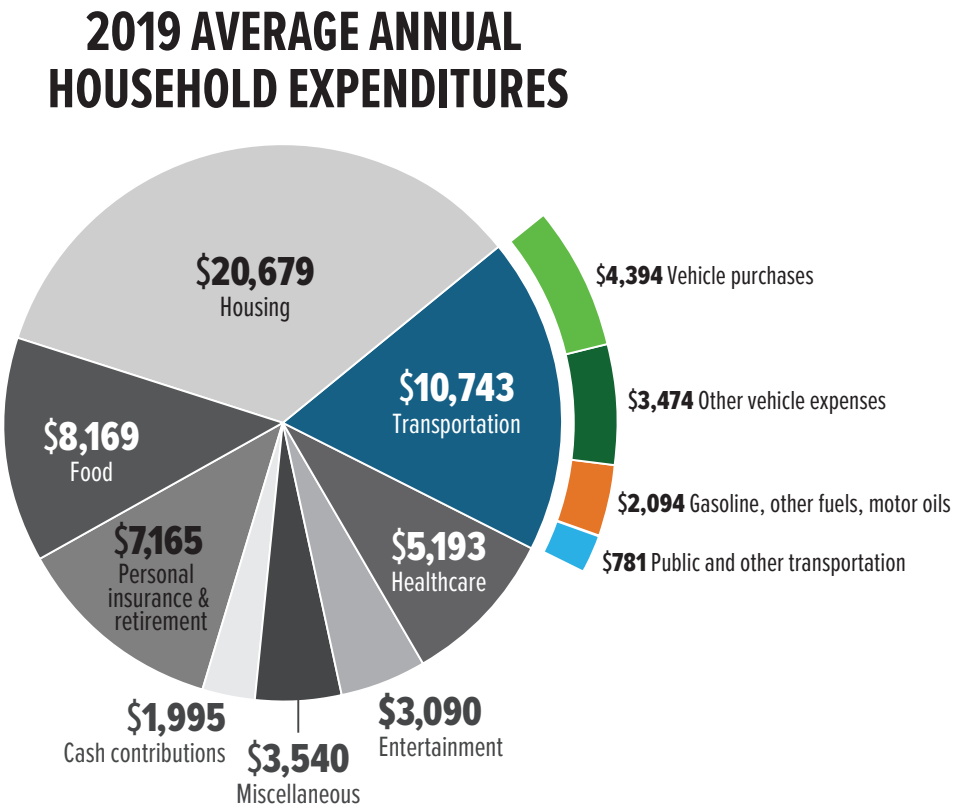


Figure 4. Consumers expenditures highlight the burden of transportation, the second-largest expenditure after housing, at over $10,000 per year on average. Data source: Bureau of Labor Statistics [REF]. This Blueprint uses 2019 as a baseline since impacts due to COVID-19 complicate the use of later data.

Fuel prices are on average 80% LOWER for EVs compared to gasoline.

Alternative transportation options represent an opportunity to reduce transportation costs while simultaneously reducing emissions and improving access and quality of life for many people. For example, EVs are already cheaper to drive than gasoline vehicles: fuel prices are on average 80% lower for EVs compared to gasoline vehicles [REF] and maintenance costs for light-duty EVs are about 40% lower than for internal combustion engine vehicles [REF]. Additionally, while electricity costs have risen, they have not increased as much as petroleum fuel costs and do not experience the same large price swings that regularly occur in the petroleum sector. The increasing supply, diversity of available models, and technological improvement of EVs are increasing their cost competitiveness with internal combustion engine vehicles. We will continue to support efforts that improve access to EV ownership and EV infrastructure, particularly for disadvantaged communities. The transportation future envisioned in this Blueprint represents an opportunity to achieve our GHG emission goals while reducing the burden of transportation on many families and businesses and making travel more accessible for all.

CONNECTIVITY, AUTOMATION, AND SHARING COULD RADICALLY CHANGE FUTURE MOBILITY

Technologies, including connectivity and automation systems, are transforming transportation in many ways. These developments can radically change how mobility needs are met, as well as consumer choices and options. New tools give people trip planning, booking, and payment options at their fingertips, improving efficiency and convenience, opening up seamless integration of travel modes, offering more options for ride and vehicle sharing, and responding to consumer preferences by increasing transparency around travel emissions.

- **SHARING RIDES –** including car/vanpooling and ride hailing—impacts emissions per passenger mile traveled. Transportation systems become more efficient when passengers and cargo can move to their destinations with fewer or no vehicle miles, which can also lower transportation costs. When passengers traveling in the same direction share a ride, they are helping to reduce energy use and emissions. However, shared vehicles often travel empty or "deadhead" between rides, increasing emissions. When vehicles take circuitous routes to pick up and drop off multiple passengers, assessing the net emissions impact can be challenging. Additionally, the pandemic has reduced the desire for sharing trips and rides, impacting travel mode choices, while increasing travel to alternative locations.

- **CONNECTED MOBILITY SOLUTIONS** enable unprecedented system-level improvements—better communication among vehicles and with infrastructure can smooth traffic flow and reduce congestion. Connectivity and automation, such as eco-approach and departure at traffic lights and platooning, enable reductions in energy consumption. Technologies that link vehicle controls with traffic control infrastructure, for example, have been demonstrated to reduce energy use by almost 20% on a test track.[11]

- **AUTOMATED DRIVING SYSTEMS** could offer convenient and safe travel options, enhancing efficiency, accessibility, and productivity. These systems are becoming increasingly available. Nine out of 10 currently available new cars are equipped with adaptive cruise control, for example, and 50% of those can control both speed and steering (e.g., lane assist) REF. It will be important to carefully plan for these systems to avoid unanticipated consequences such as increased travel demand and congestion.

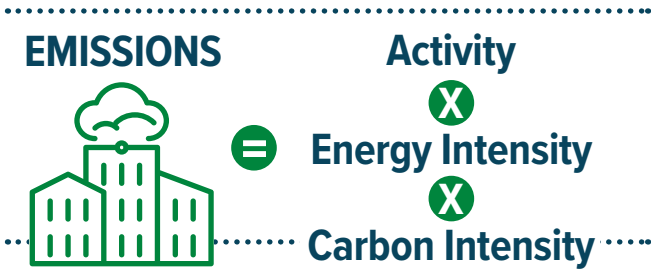
- **REMOTE WORK AND VIRTUAL INTERACTIONS** can provide a viable alternative to daily commute requirements for some people, as the COVID-19 pandemic demonstrated. An increase in remote work and virtual engagements has the potential to change travel patterns, including shifting peak commute times, reducing commuting miles, and/or increasing off-peak miles. However, overall passenger car travel has already returned to pre-pandemic levels.

Overall, widescale use of connectivity and automation will dramatically change future mobility in ways that are hard to forecast. Policies and technology solutions can harness these changes to improve safety, convenience, and affordability, and enable more efficient mobility while helping to avoid the risk of increased travel these technologies could pose if not properly managed. Our transportation systems need to be flexible enough to accommodate unforeseen new technology and societal changes that will cause mobility shifts.

[11] J. Han, D. Shen, J. Jeong, M. D. Russo, N. Kim, J. J. Grave, D. Karbowski, A. Rousseau, and K. M. Stutenberg, "Energy Impact of Connecting Multiple Signalized Intersections to Energy-Efficient Driving: Simulation and Experimental Results," to be submitted to IEEE *Vehicular Technology Magazine*

4. STRATEGIES TO DECARBONIZE TRANSPORTATION

Emissions reductions throughout the entire transportation sector will be necessary to achieve full decarbonization. All sources of transportation emissions will need to be addressed considering the projected growth and changes in mobility needs discussed above. Transportation use-phase emissions are the result of three main drivers or categories: the total amount of activity, (i.e., the distance and volume of passenger and goods travel); the energy intensity of the transportation options used to meet the activity demand, (i.e., the energy used per mile traveled); and the carbon intensity of the fuels used to provide that energy, specifically the amount of GHG emitted per unit of energy consumed:



These three categories have been widely used in scientific studies to evaluate decarbonization challenges and provide a useful framework for developing holistic decarbonization strategies [REF]. The three strategies proposed in this Blueprint directly address each of the categories and must be implemented in concert to achieve the full vision of a **clean, safe, secure, accessible, affordable, equitable, and decarbonized** transportation system for everyone. The strategies will empower people and businesses to:

- **Increase convenience** by implementing system-level design solutions that prioritize access and proximity to work opportunities, community services, and entertainment options to reduce unnecessary or excess movement of people and goods while still meeting all mobility needs. Local and regional **land-use decisions and the design of our communities and mobility systems are major drivers of travel behavior, and in turn, transportation emissions.** Improving mobility systems to reduce emissions and provide improvements in safety, traffic, and quality of life requires careful local or regional land-use planning, improved freight logistics, and harnessing emerging trends like telework and the sharing economy. Collectively, these approaches can

also help improve connections and access in communities that are historically disadvantaged and underserved.

- **Improve efficiency** by providing options to enable shifts to more efficient vehicles and transport modes like transit, rail, walking/biking, or new mobility solutions. **Coupled with system-level design solutions, more efficient mobility options offer people and businesses better access to services and reduce reliance on energy-intensive modes of transport.** Transportation efficiency can also be improved by introducing and scaling innovative technologies and services that can better connect people with mobility options, especially better first-mile/last-mile solutions. The benefits of these efforts include reduced congestion, vehicle miles traveled, parking requirements, total energy use, and GHG emissions, as well as enhanced energy security, and overall improved quality of life. Moreover, policies and technology solutions can be used to adapt to changes in future mobility. For example, the wide-scale use of connectivity and automation technologies can improve safety, convenience, and affordability, and enable more efficient travel. Properly designed policies and technology solutions can help communities avoid the risk of increased travel that could occur if these technologies and related systems are not properly managed. Achieving these goals will require proper management of mobility at the transportation systems-level rather than at mode-specific or technology-specific levels. Finally, in addition to system-level efficiency improvements, vehicle efficiency can be improved for all vehicle types.

- **Transition to clean options** by deploying zero-emission vehicles and fuels for all passenger and freight travel modes. This includes light-duty vehicles, commercial trucks, buses, off-road vehicles (such as agricultural and construction equipment), aircraft, locomotives, maritime vessels, and pipelines. This strategy involves adopting highly efficient zero-emission battery vehicles, hydrogen fuel cell vehicles, and sustainable fuels for vehicles and applications that are more challenging to electrify. Reducing the carbon intensity of the fuels that power our vehicles, airplanes, trains, and ships is essential to reducing transportation GHG emissions. **Achieving a net-zero economy by 2050 will require transitioning new vehicle sales to zero-emission technologies across all modes of transportation by the mid-2030s**, and rapidly converting older and higher-polluting fossil fuel-powered vehicles. This transition will require addressing EV charging and clean fuel infrastructure needs to enable every person and business to meet their mobility requirements.

Figure 5. Three strategies to address all sources of transportation emissions and achieve the full vision of a clean, safe, secure, accessible, affordable, equitable, and decarbonized transportation system for everyone.

A. INCREASING CONVENIENCE BY IMPLEMENTING SYSTEM-LEVEL AND DESIGN SOLUTIONS

Increasing convenience by implementing system-level and design solutions will be critical to achieving sustainable mobility, especially in light of expected population and economic growth that could otherwise significantly increase demand for passenger and freight travel. Increased convenience entails supporting community designs and land-use planning that ensure job centers, shopping, schools, entertainment, and essential services are strategically located near where people live to reduce commute times, improve walkability and bikeability, and improve quality of life. It is also important to recognize the different transportation needs and opportunities for rural communities, which are often separated by large distances, have little or no public transit options, and present unique infrastructure challenges. Reducing transportation emissions starts with understanding and addressing the factors influencing travel demand and optimizing the amount of travel needed to reliably access services and distribute freight to ensure the mobility needs of all Americans are fully met.

The design of our cities, towns, suburbs, and neighborhoods, and investments in transportation infrastructure like highways, streets, bike lanes, and railways, heavily influence travel behavior and mode choices, which in turn impacts total miles traveled and resulting emissions. Decisions that federal, regional, state, local, and Tribal governments have made—including ones made decades ago—have shaped our current transportation landscape, where reliance on driving, increased traffic, congestion, and associated emissions are accepted as norms. These decisions have also often caused disproportionate environmental and health impacts on low-income, minority, and underserved communities and deprived them of investments in affordable, low-carbon transportation options, which has been exacerbated by dispersed development. These communities have higher housing and transportation cost burdens that further exacerbate inequities. Local and regional land-use policies and infrastructure investments need to deliberately support these communities and help them address transportation disparities. Similarly, land-use practices have moved logistics facilities away from urban centers, which has resulted in increased emissions. Infrastructure investments and policy decisions made today will shape land-use development patterns for

Significant emission reductions can be achieved by 2050 by supporting regional, state, local, and Tribal governments' development and land-use policies that prioritize investments in efficient transportation options and by leveraging new technologies. Together, these system-level design and technological solutions can increase accessibility and mobility options and enhance freight efficiency while decreasing GHG emissions.

decades, setting the stage for future mobility demand and creating the opportunity to improve transportation systems. While land-use decisions are made at the regional, state, local, and Tribal levels, federal policy and investments can guide and inform those decisions.

It is important to plan for redevelopment and new development that take into account future mobility patterns and support equitable, clean, and convenient transportation systems. Robust partnerships with regional, state, local, and Tribal communities can enable and incentivize land-use decisions—promoting equitable redevelopment of existing neighborhoods, retrofitting dispersed development to create a mix of uses and improve transportation options, and planning for new development—that will lessen environmental and health harms, reduce travel times, make it easier to choose less-polluting transportation options, improve quality of life, and mitigate longer-term climate change impacts. Supporting land-use strategies and planning practices that enable clean transportation solutions will improve mobility for people and goods; give people easier access to work and housing opportunities, community services, and entertainment options; and bring other environmental, health, economic, and community benefits.

New technologies could also improve convenience through better mobility and access. For example, telework, the shared economy, and e-commerce are transforming our lives and changing the way we access goods and services. Mobile applications can more seamlessly integrate multiple travel options, including transit, e-bike and scooter options, multimodal freight, and others on a single platform. Additionally, mobile technologies have allowed digital service offerings to replace some trips. Telework is now commonplace, and remote access to services like healthcare and education has grown. E-commerce is widespread.

These trends and how they continue to evolve will be key determinants of future travel demand (see textbox on page 33). However, increased automation and connectivity will not necessarily decrease emissions and might instead induce increases in travel demand if not properly managed. For example, there could be an increase in miles traveled without a passenger for autonomous vehicles, reflecting the need to carefully consider the full effects of design solutions and new solutions. Forward-looking policy and management at the transportation system-level are needed for emerging technologies to improve quality of life and reduce emissions. This reliance on digital technologies will also require efforts to ensure that everyone has access to these platforms and the opportunities they offer.

Achieving the benefits of system-level and design solutions to reduce transportation emissions requires coordination across federal, regional, state, local, and Tribal governments and engagement with community-based organizations, businesses, and residents. Pursuant to state-enabling legislation, towns, cities, or counties have jurisdiction over regulations and zoning laws that shape land use. This positions them to use policy and planning tools to curb GHG emissions over time with future development patterns [REF]. For example, changes in local zoning regulations to allow for multifamily and affordable housing, work, and play to be close to public transportation will reduce the need for longer trips to meet daily needs.

Complementary actions that support decarbonization of the transportation sector can include integrating land-use, transportation, and freight planning to reduce vehicle miles traveled, and increasing investments in first-mile/last-mile solutions to broaden access to public transportation. Federal resources and efforts can amplify actions at all levels of government:

Fix Existing Assets Before Building New Assets

One key system-level planning solution is to prioritize investments that fix assets and modernization projects that enhance existing infrastructure, avoiding more costly expansions in roadway capacity. Investments in expanding roadway capacity increase maintenance expenditures and induce additional travel, resulting in increased emissions. Additionally, capacity expansion generally provides limited-to-no congestion reduction benefits over the long-term REF, REF, REF, REF. In 2018, 22.9% of spending on highways receiving federal aid went to system expansion REF. A recent analysis by the Georgetown Climate Center found that whether the investments in the BIL lead to an increase or a decrease in emissions depends on how effectively the federal government and regional, state, local, and Tribal entities can use the available funds to support climate-friendly infrastructure projects and prioritize system maintenance and multimodal options over expanding roadway capacity REF. The BIL and IRA funding present an opportunity to encourage locally driven land-use changes and reinvest in existing communities, including rural main street revitalizations, and transit-oriented and walkable development.

Eighty-seven percent of federal highway funding is distributed to states via a congressionally established formula, and states have discretion in how those funds are spent REF. In order to meet our climate goals by prioritizing repairing and modernizing existing

infrastructure, DOT's Federal Highway Administration (FHWA) released guidance in December 2021 to encourage states and other funding recipients to use newly available resources to prioritize repair, rehabilitation, and modernization of existing roads and bridges over expanding capacity, and to be mindful of their abilities to deploy resources in support of multimodal projects REF. Several states have already shown leadership in this space and have goals for reducing VMT, including California, Minnesota, Massachusetts, Pennsylvania, Washington, and Colorado REF.

Changes in Land-Use Planning and Transportation Systems Design

More compact cities and towns with a mix of commercial, residential, and civic uses close to each other reduce the distances between where people live, work, and recreate, which makes active modes of transportation and transit even more viable and allows people to spend less time sitting in traffic.

A compact urban form can also help reduce distance traveled at various supply chain stages, thereby making light modes, such as cargo-bikes and smaller EVs, more practical for freight delivery. Planning for all transportation system users, including pedestrians, bicyclists, transit riders, motorists, and delivery drivers, can also improve roadway safety for all users, encouraging more people to choose active transportation.

Planning must also be centered around improving access for people with disabilities to ensure that all transportation system users are able to choose from clean mobility options. The combination of mixed-use development, increased density, and improved transportation systems could also lead to more efficient distribution of goods. For example, mixed-use development could reduce the travel distance between stores or distribution centers and their customers, and also allow for different vehicle choices like delivery e-bikes. Public and private players in the last-mile ecosystem of freight delivery have a key role to play in reducing emissions because of the significant rise in e-commerce.

The federal government, with regional, state, local, and Tribal governments, stakeholder groups and partners from private industry, can play a role in the following areas:

- **Equitable Transit-Oriented Development (eTOD)**. Improved land-use planning and transportation systems design can also support transit-oriented development, making active travel modes (e.g., walking and biking) and public transportation even more viable. As these modes become more attractive, drivers also benefit from reduced congestion.[12] ETOD supports a walkable, mixed-use development and transit lifestyle and meets the needs of existing businesses and consumers, while avoiding displacement of local residents and ensuring an adequate mix of affordable and market-rate housing. A cornerstone of TOD is the inclusion of affordable housing, to be achieved through new construction, preservation of existing stock, and tenant protection efforts to minimize displacement caused by increased land values that often accompany TOD. The federal government can work with local transit agencies and the private sector to incentivize development that protects existing residents from displacement, as well as support small business and economic development. For example, under the Federal Transit Administration's (FTA) Joint Development Guidance, local transit agencies can use land purchased with FTA funds to support eTOD through joint development partnerships or joint development.

Decision-makers at the regional, state, local, and Tribal levels can also leverage federal funding opportunities to support first-mile/last-mile solutions and equitable transit-oriented and walkable development. For example, localities can apply for DOT RAISE planning grants to develop integrated corridor plans that encompass improvements to bike/pedestrian infrastructure and transit along with affordable housing strategies, or seek federal financing opportunities such as DOT's loans programs, HUD's Community Development Block Grants and the associated Section 108 Loan Guarantee program—along with formula affordable housing grants through the Home Investment Partnership Program (HOME)—to support transit-oriented development REF, REF.

In addition to funding, federal agencies can coordinate and align technical assistance, as is being done through the Thriving Communities Network, which provides a whole-of-government approach to place-based technical assistance from seven federal agencies, including DOE, DOT, EPA, and HUD.[13] For example, HUD and DOT are partnering to provide assistance to local governments to identify and use vacant land on or

[12] U.S. Government Accountability Office, *Public Transportation: Multiple Factors Influence Extent of Transit Oriented Development*, GAO –15-70, 2014. Cited in Mariia V. Zimmerman et al, National Academies, *Coordination of Public Transit Services and Investments with Affordable Housing Policies* (2022).

[13] DOT, Federal Interagency Thriving Communities Network

near transportation investments that is suitable for housing development, and identify unnecessary barriers to location-efficient housing REF.

- **Location Affordability and Efficiency.** Combining transit-oriented development with affordable housing strategies is an effective way to reduce GHG emissions, while supporting other co-benefits. Location efficiency is the siting of housing and commercial development in proximity to transit and other amenities. Past suburban and exurban development resulted in families moving further and further from downtowns and urban centers to find affordable housing. In doing so, they often incurred higher transportation costs associated with the location of that housing. HUD and DOT created the Location Affordability Index (LAI) in 2015 to increase public access to data about transportation, housing, and land use REF, REF. The LAI provides a combined index of household housing and transportation expenditures, taking into account proximity to transit, car ownership, access to amenities and services, and other factors.[14] Similarly, EPA developed a Smart Location Database that includes more than 90 attributes summarizing characteristics such as housing density, diversity of land use, neighborhood design, destination accessibility, transit service, employment, and demographics REF. Federal agencies can encourage or incentivize location-efficient housing with federal financing, as HUD does through the Green Mortgage Insurance Premium for multifamily affordable housing, and some states do in Qualified Allocation Plans for the federal Low Income Housing Tax Credit.

- **Local Zoning Reform.** States and localities can craft local regulations and zoning policies to encourage more housing supply in walkable, transit-oriented areas. The president's Housing Supply Action Plan REF identifies local zoning and land-use policies as a significant constraint on affordable housing production: "One of the most significant issues constraining housing supply and production is the lack of available and affordable land, which is in large part driven by state and local zoning and land-use laws and regulations that limit housing density." Local zoning reform can address the critical need to both expand housing supply, and simultaneously enable a wider range of transportation choices in local communities. Localities may also reset minimum and maximum parking requirements. Recognizing that zoning is a local responsibility, the Housing Supply Action Plan includes proposals for rewarding jurisdictions that have implemented forward-looking local land-use policies with higher scores in certain federal grant processes, and leverage BIL funding to encourage state and local governments to boost housing supply. As outlined in the Housing Supply Action Plan, DOT will continue to include language encouraging locally driven land-use reform, density, rural main street revitalization, and transit-oriented development in BIL and other transportation discretionary grant programs.

- **Supporting Safe Active Transportation.** Regional, state, local, and Tribal governments can invest in safe active transportation, including through opportunities in the BIL, such as the new Safe Streets and Roads for All program and the Transportation Alternatives Program to support

[14] Location affordability refers to the fact that most of the benefit occurs because of the attributes of a neighborhood or location, holding income and household size constant; makes it possible to identify bundles of discrete actions (those that increase local convenience and regional accessibility) that can lower transportation costs.

pedestrian and bike infrastructure, recreational trails, safe routes to school and more. Additionally, curbside management strategies and complete streets, or streets designed to enable safe use and support mobility for all users, can enhance safety and convenience in communities and support a shift to active transportation. As more people use clean travel options and personal light-duty travel decreases, road lanes can further accommodate shared and active modes of transportation REF.

- **Coordinated Transportation Planning.** Transportation planners and researchers have long recognized the importance of coordinating transportation, transit, and land-use planning near higher-capacity transit services to help build ridership, reduce congestion, and shape community development REF. The BIL includes several changes in the metropolitan planning process that provide new opportunities to align investments in transportation and housing.[15] These include provisions for Metropolitan Planning Organizations to consider projects and strategies that promote consistency between transportation improvements and state and local housing patterns; to increase consultation with housing officials and opportunities for comment by affordable housing organizations; and to address the integration of housing, transportation, and economic development strategies through a housing coordination plan.

Digital Solutions and Teleworking

Telework and other components of a digital economy that allow consumers to access information and services remotely can improve convenience by reducing travel demand, especially for work commuting. The COVID-19 pandemic has highlighted major opportunities for telework, with some studies showing the possibility of 10% long-term reduction in annual VMT REF. However, for most travel modes, total travel activity has already returned to near pre-pandemic levels. Ultimately the impact of telework depends on the specific travel displaced and whether additional travel is induced due to vehicle use by other household members, possible relocation decisions, impacts to commercial centers, and other complex factors. Overall, the transportation implications of telework are not yet fully understood REF, REF.

Transportation Demand Management (TDM)

Transportation demand management is the use of strategies and policies to reduce travel demand, which in turn reduces traffic, energy use, and GHG emissions. TDM initiatives are multimodal in nature and include strategies like congestion pricing and parking pricing paired with affordable transit options, car free zones with accessible and safe bike and pedestrian infrastructure, ride sharing promotions, safe walking, biking, and rolling routes to school, transit fare discounts, off-peak goods delivery incentives, and more. An understanding of local mobility needs and optimizing existing transportation assets are essential for implementing effective TDM strategies REF. The federal government can support TDM efforts at the regional, state, local, and Tribal levels by sharing best practices, data, and tools to support decision-maker efforts to effectively manage transportation demand.

Supply Chain Management and Freight Efficiency

Supply chain management and logistics planning is the practice of optimizing the movement of goods from one place to another. Improvements to supply chain management, which could reduce VMT and associated emissions, involve strategies to improve

[15] Bipartisan Infrastructure Law, Section 11201(d), 23 USC 134.

vehicle and infrastructure utilization, such as enabling vehicles to travel with full loads as often as possible (reducing empty or "deadhead" miles) and optimizing vehicle travel routes. For example, just-in-time queuing at ports can enable ships to optimize their speed, thus reducing fuel consumption and emissions REF. Strategies to increase freight efficiency could also include using emerging technologies like improved packaging and materials, distributed manufacturing, and dematerialization. Advanced computing and data analytics (e.g., sensors, big data analytics, blockchain) have the potential to improve supply chains by optimizing truck routing and freight logistics. EPA's SmartWay program helps companies improve freight transportation sustainability by selecting more efficient modes, carriers, equipment, and operational strategies and fuel-saving technologies REF. The continuing growth of e-commerce creates new opportunities for improvement—as increasing direct delivery of goods to consumers can offset personal travel—but fast-delivery demands and returns present new challenges.

These system-level and design solutions to increase convenience have the potential to deliver total reductions in GHG emissions of an estimated 5-15% by 2050, and also offer significant additional co-benefits (see textbox on page 48) REF, REF. Near-term benefits are expected to be modest due to the long service lives of residential and commercial buildings and transportation infrastructure, but benefits can compound over time and managing demand is critical to avoid increased emissions from population growth or induced demand from clean technologies and solutions. Implementing system-level and design solutions will require coordination across multiple levels of government, especially local governments and planning organizations. DOE, DOT, EPA, and HUD encourage these approaches in partnership with other federal agencies, regional, state, local, and Tribal governments, and private stakeholders. States and cities have taken the lead on many of these solutions, however there is a federal role in aligning and supporting these efforts.

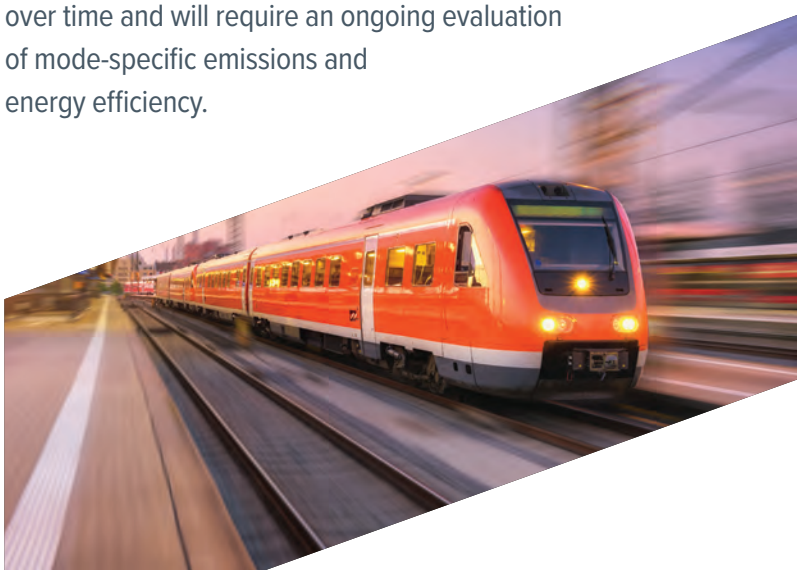
USING THE TRANSPORTATION RIGHT-OF-WAY FOR CLIMATE BENEFITS

The transportation right-of-way (ROW) offers an opportunity to support decarbonization and enhance energy system resilience. Specifically, transportation agencies can leverage pre-existing sites to host critical infrastructure, such as electric vehicle charging infrastructure, electricity transmission lines and renewable energy systems with lower approval barriers. For example, more than 52,000 acres of empty roadside land is available at interstate exits and suitable for solar energy development, offering the potential to generate up to 36 terawatt hours (tWh) a year, which is enough energy to power roughly 10 million passenger EVs REF. The ROW also offers a pathway to deploy electric transmission lines that will be critical to connect renewable electricity to end users, increasing resiliency for the benefit of all Americans REF. Other potential resilience benefits of using transportation ROW in innovative ways include sequestering carbon and reducing air pollution through the strategic planting of trees and bushes REF; combating heat island effects with native vegetation; and capturing, filtering, and absorbing rainfall to protect water quality and reduce localized flooding. This green infrastructure—trees and planted areas along streets, parking lots, and other paved areas—also beautifies neighborhoods, makes walking and biking more appealing, and can manage stormwater runoff more cost-effectively than conventional infrastructure REF. While working in the right-of-way can entail a high degree of coordination and approvals from property owners, easement holders, and the travelling public, we understand the benefits of these applications, and DOT released a memorandum to further encourage and allow for state transportation agencies to expand the productivity of existing highway ROW REF.

B. IMPROVING EFFICIENCY THROUGH MODE SHIFT AND MORE EFFICIENT VEHICLES

The second key strategy to reduce transportation emissions is to improve efficiency by increasing the availability of highly efficient travel options, while also improving the energy efficiency (or fuel economy) of all vehicles, especially passenger vehicles, which often have low occupancy. Road freight vehicles such as trucks and vans are the largest contributor to freight emissions, and heavy road freight vehicles in particular can be difficult to decarbonize. This energy- and emissions-intensive paradigm is a significant reason why transportation has become the largest GHG emissions source in the United States. Using more efficient modes and vehicles is essential to reduce overall transportation emissions and energy use. The use of more efficient modes could also reduce the number of vehicles on the road and reduce congestion, improving travel time and traffic flow thereby further reducing GHG emissions and other harmful air pollutants.

The choice of which transport mode is best for any given trip is complex and depends on available mobility options, as well as cost, speed, safety, convenience, and other factors. Generally, transportation options that move greater numbers of people or volumes of goods (buses, trains, large ships, carpooling, etc.) result in lower GHG emissions per mile traveled. Figure 6 provides a snapshot of the current emissions from various travel modes in the United States (note that these results are based on current vehicles on the road powered by petroleum fuels). For local passenger travel, large personal vehicles with low occupancy have the highest emissions, while buses and transit rail offer the cleanest options other than walking or biking. For longer passenger trips, buses and cars with multiple occupants offer the lowest emissions option, followed by rail, aviation, and large passenger vehicles with low occupancy. For freight, maritime and rail offer the cleanest options, followed by trucks and aviation, which results in the highest emissions. New first/last mile transportation services and infrastructure, such as shared electric scooters and e-bikes, shared mobility apps, mobility hubs where multiple personal transportation options are available, and intermodal freight terminals that can help optimize freight movement, are all transportation developments that can enable and support a shift to more efficient transportation modes and help reduce GHG emissions [REF]. Additionally, emerging vehicle technologies and fuels will reduce emissions for many of these travel modes over time and will require an ongoing evaluation of mode-specific emissions and energy efficiency.



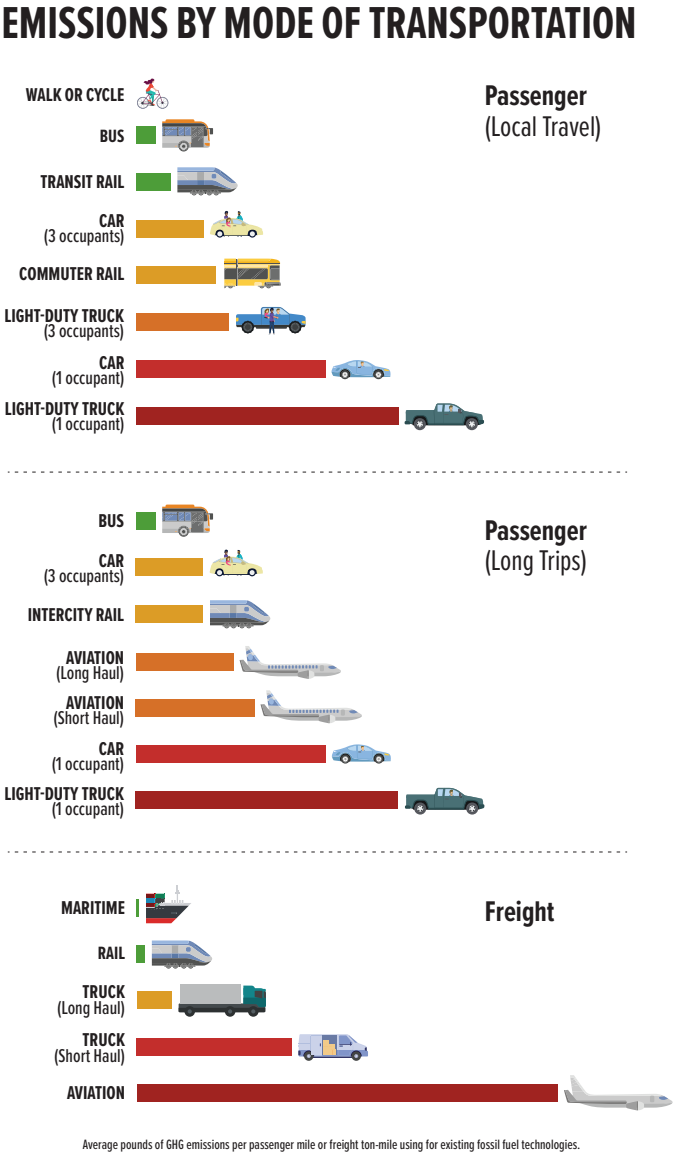


Figure 6. Different modes of transportation have different carbon intensities per passenger mile or per ton mile, and a system that prioritizes low-carbon-intensity options has fewer emissions overall. Note: emissions vary significantly based occupancy, fuel type, and other factors, so the scale in this figure is meant to be illustrative and represent the current fuel mix. For example, transit rail is fully electrified, while most other modes rely on fossil fuels. Illustrative data informed by GREET modeling [REF] and EPA data [REF].

By increasing clean and efficient transportation options and improving vehicle efficiency, we can reduce harmful climate change impacts and air pollution; ensure a more equitable, accessible, and affordable transportation system that improves quality of life for all users; reduce reliance on fossil fuels; and improve energy security. In 2018, public transportation in the United States saved 63 MMT of carbon dioxide equivalent.[16] Building on this success, an effort to continue expanding transit, intercity rail, and active transportation options and use will further reduce emissions. In addition, clean and efficient freight solutions can help address negative impacts associated with freight delivery, such as traffic and air pollution, while ensuring that consumer expectations are met. Combined with enhanced travel convenience, improving efficiency can significantly reduce energy needs and GHG emissions.

Multiple **solutions and actions** can improve mobility options and offer all Americans more affordable, energy-efficient, and cleaner alternatives, including:

- **More investments in efficient passenger and freight transportation**
  Regional, state, local, and Tribal governments can encourage greater use of transit by leveraging federal funding and financing opportunities to expand existing transit and intercity rail systems and invest in new service. Ensuring that transit service is equitable and fully accessible for people with disabilities will make it easier and more appealing for all users to choose less carbon-intensive options. Strategies to increase convenience that were highlighted in the previous chapter will also improve mobility options, as transit-oriented development and complete streets will allow more people to choose lower-carbon modes of transportation such as walking, biking, and public transportation. Investment in protected

[16] Transit Cooperative Research Program (Research Report 226)

bike lines, accessible sidewalks, and other roadway safety improvements will further encourage people to choose active modes of transportation. Timely and impartial data collection and analysis will also help inform decisions and guide investments, especially on behavioral responses and impacts of innovative technologies and solutions. Equitable access to rail, pedestrian, and bicycle infrastructure can also help reduce emissions from freight. Well-maintained, wide sidewalks, for example, could support delivery robot movement in addition to pedestrian access, and bicycle infrastructure can support the use of cargo bikes for freight delivery.

- **Incentives for less carbon-intensive options and shared mobility**
  All levels of government should guide and incentivize development and use of efficient passenger travel systems, including vehicle sharing solutions. This could include a diverse set of policies, including local zoning and permitting and incentive programs. Additionally, investing in infrastructure for more efficient modes of freight transport will enable and encourage businesses to use less carbon-intensive options. Jurisdictions can consider options like dynamic parking pricing, removing minimum parking space requirements, and congestion pricing to encourage people to consider alternative travel modes or solutions to enable ride pooling and vehicle sharing. In doing so, they should also consider equity implications and ensure that these policies do not disproportionately burden disadvantaged communities. Employers can also provide incentives for employees to choose less carbon-intensive commuting options, including public transportation, active transportation, carpooling, and telework. The federal government can support these efforts by sharing best practices and providing funding. Educational materials that highlight the benefits of mode shift, such as financial savings, increased exercise, less stressful commutes, or more convenient travel options, can encourage the general public to consider less carbon-intensive mobility options. Industry can prioritize shifting parts of shipment journeys away from trucks to rail and water shipping when feasible. Additionally, light modes of freight delivery, such as cargo bikes, delivery robots, and small EVs can be encouraged for local/last-mile deliveries in more compact areas. Incentives can be offered to encourage the use of freight-efficiency practices, such as minimizing empty miles, off-peak deliveries, and freight vehicle load optimization.

- **Improvements in the operation of transportation systems**
  Transportation systems operations can be improved and optimized to reduce energy use and emissions. For example, better logistics could increase vehicle routing and load factors, improving efficiency while also reducing fuel costs. New technologies can help improve multimodal freight transport and logistics and enable the use of shared transport assets and services, and more effectively respond to changes or unexpected delays using real-time data. Also, new connectivity and automation solutions can enable additional system-level efficiency improvements to alleviate traffic congestion and significantly reduce emissions. For example, cooperative driving automation (e.g., platooning, intersection eco-approach) could reduce congestion and improve energy efficiency by up to 20% REF. Additionally, new air traffic management methods such as Trajectory Based Operations

can increase system efficiency by optimizing flights using time-based management, improving information exchange between air and ground systems, and fully leveraging an aircraft's ability to fly a precise path [REF]. Importantly, automation and other operational improvements could result in additional travel demand, offsetting efficiency improvement benefits. This paradox highlights the importance of properly managing new technology to achieve positive results.

In 2018, public transportation in the United States saved

63 MILLION METRIC TONS

of carbon dioxide equivalent.

- **Improvements in the energy efficiency of vehicles**
  While achieving long-term climate goals requires transitioning to cleaner vehicles and fuels (see Section 4C), conventional vehicles will continue to be sold over the next decade and many legacy vehicles are likely to still be operating in 2050. Therefore, it is critical to continue to improve system- and vehicle-level efficiency through improved engines and vehicles; light-weighting and use of better materials; reduction of non-combustion emissions (e.g., pipeline leakage); and optimizing vehicle use to minimize emissions (e.g., better freight logistics to improve fuel economy). Vehicle-level efficiency improvements such as hybridization or mixed use of fuels (e.g., oceangoing vessels using electricity generated on shore while in ports) will also be important. Vehicle energy efficiency improvements will also benefit consumers and businesses through lower operating costs. These improvements will help reduce the cost of future EVs while increasing energy security. Government policies have played a key role in improving the energy efficiency of new passenger vehicles and medium/heavy-duty trucks. These policies will continue to be critical as clean vehicles are adopted.

- **Innovative business models and solutions**
  Emerging business models and technologies will shape the future of the transportation sector. The public and private sectors should work together to explore and test technologies that enable mode shifts and multimodal solutions that include high-efficient modes for passenger and freight travel. For example, rideshare companies can encourage pooled rides and partnerships with transit agencies so the public can easily incorporate micromobility, transit, and additional forms of shared mobility when planning trips. The California Integrated Travel Program (Cal-ITP) is a seamless trip planning and payment program across California rail and bus providers that brings together the principles of "sustainability, equity, and optimizing the rider experience" by eliminating barriers related to fare payment, verification of transit discounts, and accessible real-time data [REF]. Overall, public support can help reduce investment risks and encourage innovative solutions to test market effects and consumer response.

The federal government can support regional, state, local, and Tribal governments in facilitating a shift toward more efficient travel through funding and financing opportunities for transit, rail, and active transportation. DOT can also work with stakeholders to help facilitate this shift through improvements in roadway safety. The department's *National Roadway Safety Strategy* outlines a comprehensive approach to improve safety on our nation's highways, roads, and streets, which will encourage more people to walk, bike, and roll. Working with stakeholders, the federal government can improve mobility options for everyone, but ultimately the general public and businesses make decisions based on what travel choices are most affordable, accessible, and convenient. Cleaner, more affordable, and more convenient travel options will encourage people to explore transportation options besides single-occupancy vehicles and help people become more comfortable with new, efficient transportation choices. The federal government, partners, and stakeholders will need to build a transportation system that ensures these efficient travel modes are the most reliable, affordable, and convenient solutions for both freight and passenger movement.

CO-BENEFITS OF DECARBONIZING TRANSPORTATION SYSTEMS

In addition to beneficial climate impact, improved transportation systems and mobility options offer a variety of co-benefits.

- **Safety and Quality of Life –** Investments in active transportation infrastructure can ensure that those walking, biking, and rolling can travel safely and improve access to public transportation. In addition to reducing air pollution, these investments will generate health benefits by encouraging people to exercise in the course of their daily lives and avoid the stress of driving in traffic. Transportation systems that rely more on walking, biking, and transit require a smaller physical footprint, which reduces impacts on the natural and human environment, frees up space used for parking, and lowers noise and pollution in communities, greatly improving quality of life in our neighborhoods.
- **Equity –** Today's transportation system does not serve all communities equitably. For example, 20% of American families below the poverty line do not have access to a car, with a disproportionate percentage of those families being Black (33%) and Latino (25%) REF. Limited transportation options mean limited access to jobs, culture, recreation, and even friends and family. Investments in reliable, frequent, and affordable transit service, along with safe sidewalks and bike lanes, provide much-needed mobility for households without access to personal vehicles and offer outsized benefit for people of color, residents of low-income communities, and Americans with limited mobility. Increasing access to low-carbon travel infrastructure by improving bicycle and pedestrian safety will benefit all roadway users and bring significant benefits to vulnerable roadway users, including seniors, people with disabilities, and people in lower income communities. In addition, investments in infrastructure can increase wealth creation opportunities for underserved communities. DOT's Disadvantaged Business Enterprise program is helping ensure that small businesses owned by people of color and women get a fair chance to compete for infrastructure contracts.
- **Air Quality –** Decarbonizing the transportation sector will reduce air pollutants that are harmful to the environment and to public health, such as NOx, volatile organic compounds, particulate matter, sulfur dioxide, and others (also see air quality textbox on page 29).
- **Economic Growth –** Investment in public transportation, rail, and active transportation infrastructure generates large economic returns. Every $1 invested in public transportation generates an estimated $5 in long-term annual economic returns, and every $1 billion invested in public transportation supports about 20,000 jobs REF. Fuel savings from walking and biking instead of driving are estimated to be $3.3 billion annually in the U.S. REF. A study on Georgia's Silver Comet Trail expansion found that people gain an estimated $4.64 in direct and indirect economic benefits from every $1 invested in the expansion REF. In 2017, Class I railroads alone generated $219 billion in economic activity and yielded around $26 billion in tax revenues, while supporting 1.1 million jobs across the nation REF. Additionally, the compact, mixed-use development patterns that support a cleaner transportation system also generate greater revenue per acre of land, spur more economic productivity, and support job creation REF.
- **Energy Security –** Transportation is currently heavily dependent on petroleum fuels, and the sector accounts for over 70% of all petroleum used in the United States. Improving mobility options and the efficiency of the transportation sector will reduce our dependence on petroleum, limit the impacts of petroleum price volatility and inflation, and lower our total energy use. Lower and more diversified energy demand—when accompanied by enhanced domestic supply chains or clean technologies—will improve the nation's security, decrease vulnerability to supply interruptions or price changes, and increase the reliability and affordability of mobility for all Americans. Incentives in the BIL and IRA combined with other federal investments and the National Blueprint for Lithium-Batteries REF are actively expanding sources of battery components, increasing diversification and energy security.

C. TRANSITIONING TO CLEAN OPTIONS BY DEPLOYING ZERO-EMISSION VEHICLES AND FUELS

The third strategy to reduce transportation emissions is to transition to clean options by deploying zero-emission vehicles and fuels as rapidly as possible for all viable vehicles and fuels. Improving the transportation system by increasing convenience and improving efficiency is the foundation upon which we can deploy clean vehicles and fuels. Successfully implementing the first two emissions reduction strategies will ease the challenges associated with rapidly deploying clean vehicles and fuels and replacing fossil fuels with clean alternatives.

Achieving a net-zero-emissions economy by 2050 requires aggressively curbing transportation emissions through a suite of technology solutions across all passenger and freight travel modes, vehicle types, and fuels. Today's transportation system relies on petroleum fuels for more than 95% of its energy use. With renewable electricity and sustainable fuels becoming increasingly available and affordable, there are more viable pathways to transition to low- or zero-carbon technologies by 2050.

The cornerstone of this new transportation paradigm will be highly efficient zero-emission EVs that can leverage clean electricity while also supporting the decarbonization of the power sector (see textbox on page 55). The specific requirements of different modes and applications will require multiple targeted technology solutions across all passenger and freight travel modes, including direct electrification, use of hydrogen, and low-carbon sustainable liquid fuels. Progress in battery and electric drive technologies has already made zero-emission battery EVs a viable alternative to fossil fuel-powered vehicles in many applications. EVs are rapidly becoming a practical alternative for most on-road vehicle applications, with potential opportunities in other modes as well [REF]. Hydrogen fuel cell vehicles can complement battery EVs for applications requiring longer ranges and faster refueling times, like long-haul trucking. To achieve net-zero targets, sustainable fuels produced from biomass and waste feedstocks can be used to decarbonize hard-to-electrify forms of transportation such as air transport and long-haul shipping that require more energy-dense fuels. Widespread electrification of on-road vehicles will ensure that sufficient amounts of sustainable fuels are available for these harder-to-electrify applications (see textbox on page 54). Even with accelerated fleet turnover, combustion engine vehicles will still be in use after 2040, so sustainable fuels can help decarbonize legacy vehicles during the transition toward zero-emissions technologies. The transition to clean fuels will also have a profound effect on the source of this energy—the electric grid. The grid itself is decarbonizing, and the electricity needs of new transportation systems will require innovations in design and operation of the grid.

These clean technologies will also have benefits outside the transportation sector—such as use of hydrogen or batteries to decarbonize industry or the electricity sector and use of bio-products to replace fossil fuel

1 icon represents limited long-term opportunity 2 icons represents large long-term opportunity 3 icons represents greatest long-term opportunity	BATTERY/ELECTRIC	HYDROGEN	SUSTAINABLE LIQUID FUELS
Light Duty Vehicles (49%)*		—	TBD
Medium, Short-Haul Heavy Trucks & Buses (~14%)			
Long-Haul Heavy Trucks (~7%)			
Off-road (10%)			
Rail (2%)			
Maritime (3%)		†	
Aviation (11%)			
Pipelines (4%)		TBD	TBD
Additional Opportunities	• Stationary battery use • Grid support (managed EV charging)	• Heavy industries • Grid support • Feedstock for chemicals and fuels	• Decarbonize plastics/chemicals • Bio-products
RD&D Priorities	• National battery strategy • Charging infrastructure • Grid integration • Battery recycling	• Electrolyzer costs • Fuel cell durability and cost • Clean hydrogen infrastructure	• Multiple cost-effective drop-in sustainable fuels • Reduce ethanol carbon intensity • Bioenergy scale-up

* All emissions shares are for 2019

† Includes hydrogen for ammonia and methanol

Figure 7. Summary of vehicle improvement strategies and technology solutions for different travel modes that are needed to reach a net-zero economy in 2050 (more details provided in Section 5).

feedstocks—but will require targeted investments in RD&D, infrastructure deployment, supply chains for materials and minerals, and comprehensive policy support that varies by travel mode as described in more detail in Chapter 5.

Reducing transportation emissions to a level consistent with a net-zero economy in 2050 will require a full fleet transition, as well as a large scale-up of sustainable fuels to replace petroleum that will take decades. To achieve 2050 goals, most new vehicle sales will need to be zero-emissions by the mid-2030s, and the legacy stock of fossil-based vehicles must be simultaneously transitioned to EVs. Multiple **solutions and actions** are needed to enable such a transition:

- **Support Adoption of Zero-Emission Vehicles** Zero-emission EVs offer a pathway to transition away from fossil fuel vehicles and decarbonize a large portion of the transportation sector. This transition will help reduce air pollution and improve health, especially in communities near highways or heavy traffic zones. To achieve this transition, numerous coordinated actions across multiple stakeholders will be required. These actions include continued support for technology development and cost reduction; financial incentives to support market growth; and regulation to support the broad adoption of EVs and to require safe, efficient vehicles and infrastructure. Stakeholders will need to support consumer education on these new technologies, work to deploy the required fueling and recharging infrastructure, and develop tools and signage that enable drivers to locate and easily use new infrastructure. Particular attention and investment will be needed at the federal,

state, and local levels to plan, fund, and install infrastructure in advance of zero-emission vehicles deployments and to ensure these benefits extend to disadvantaged communities. These actions will be critical for overburdened communities looking to increase access to and adoption of EVs. The federal government and other stakeholders should also ensure safe and reliable supply chains and ensure that a trained workforce is available. Finally, the federal government should adopt policies that account for the full set of externalities associated with fossil fuels.

The federal government is already leading the transition to EVs. In his Executive Order on Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability, President Biden directed the federal government to use its scale and procurement power to achieve ambitious goals, including 100% zero-emission vehicle acquisitions by 2035 and 100% zero-emission light-duty vehicle acquisitions by 2027 REF. Moreover, President Biden set a target of 50% EV sales share in 2030 and kicked off the development of long-term fuel efficiency and emissions standards to save consumers money, cut pollution, boost public health, advance environmental justice, and address the climate crisis REF.

Importantly, the IRA is already providing consumer incentives and investments supporting the expansion of zero-emission transportation industries, which will help support the industrial transition to clean energy technologies and secure the production of EVs in the United States. Building upon investments from the BIL, including $2.8 billion in the sustainable sourcing of critical minerals, battery production, and recycling, and the CHIPS and Science Act which will bolster the supply of automotive microchips, the IRA supports the commercialization of advanced vehicle technology components, conversion of domestic automotive manufacturing facilities, production tax credits for batteries and critical minerals, and more. For example, $3 billion from IRA will enable the United State Postal Service to purchase 66,000 battery electric delivery vehicles by 2028, with acquisitions delivered in 2026 and thereafter expected to be 100% electric REF. Timely and impartial data collection and analysis from federal agencies will inform decisions and guide investments during the transition, allowing for course adjustment as more information is collected, especially on impacts of innovative technologies and solutions. Additionally, education highlighting the benefits of EV ownership and dispelling misinformation will accelerate the adoption of personal EVs.

- **Accelerate Replacement of Older Vehicles**
  At current vehicle turnover rates, replacing the more than 300 million fossil fuel vehicles in operation today will take decades. Fleet turnover rate varies by transportation mode, but in nearly all cases it requires that almost all new vehicles purchased by the mid-2030s are zero emission. Even at that rate, without acceleration in legacy vehicle replacement, a share of the vehicles in use in 2050 may still rely on fossil fuels. Funding programs in both BIL and IRA will help bring new zero-emission vehicles and engines to market sooner than would be otherwise expected. It is also possible that vehicle turnover rates will accelerate as the technology and costs of zero-emission vehicles continue to improve. If, for example, EVs become cheaper than internal combustion engine vehicles and dominate new vehicle sales, the cost to operate fueling and maintenance infrastructure and services for internal combustion engines could increase, further accelerating the replacement of legacy fossil fuel-powered vehicles. However, higher up-front costs continue to serve as a barrier to adoption for lower-income consumers. Incentives or other policies

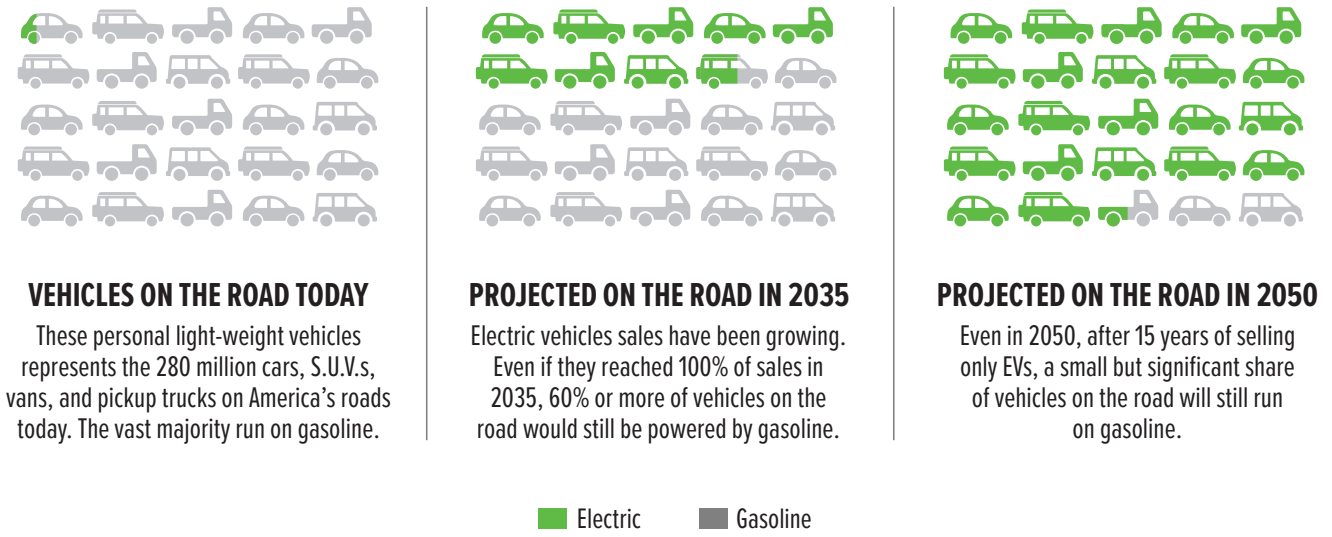


Figure 8. Illustrative example of fleet turnover evolution in a scenario achieving 100% light-duty EV sales in 2035 based on modeling framework documented in Muratori et al.

may be required to increase the rate of adoption of zero- or low-emission vehicles or to replace fossil fuels with cleaner energy alternatives. This is particularly true for transportation modes such as maritime and rail that have vehicles with very long lifespans. Additionally, educational materials and data on the benefits of zero-emission vehicles (e.g., lower maintenance and fueling costs) can support the acceleration of the transition.

- **Support Development of Drop-in Sustainable Fuels and Related Infrastructure**
  Not all transportation applications are prime candidates for electrification. Some applications, such as long-haul aviation, have range and power requirements that are beyond the limits of current and expected electric technologies. Drop-in, energy-dense sustainable fuels will be needed for these applications. These sustainable fuels can also help decarbonize legacy vehicles across other modes and applications during the transition period. While some initial production is already in place, these fuels require targeted support to continue technology progress, including policies and incentives to support market growth in early phases. Ideally, the deployment of these fuels would utilize existing infrastructure, leverage streamlined regulation to ensure interoperability of systems, and support the development of safe and reliable supply chains and a properly trained workforce. Renewable diesel and sustainable aviation fuels are already being developed using standards to ensure they are safe for use and are fully compatible with existing vehicle fleets and fueling infrastructure and minimize emissions in their full life-cycles. As a result, these fuel alternatives are already capitalizing on our existing supply chains and workforce, with even greater opportunities ahead to leverage existing industrial infrastructure by converting petroleum refineries and other facilities for sustainable fuel production.

- **Develop a Robust Supply Chains and Workforce to Produce Zero-Emission Vehicles and Fuels**
  A robust domestic supply chain for batteries, charging infrastructure, hydrogen, and sustainable fuels will be critical to support the transition to zero-emission vehicles and fuels. Major advancements in

oil and gas technologies allowed the United States to reduce its dependence on foreign fossil fuels and their volatile global markets. As we transition to new clean technologies, it is imperative to support a comprehensive industrial strategy that maintains this energy independence and strengthens our national security by supporting diverse energy sources, by building reliable supply chains, and by developing secure manufacturing solutions. Such a strategy will help ensure reliable access to strategic materials and address potentially stranded assets REF, REF. The Federal Consortium for Advanced Batteries (FCAB) is bringing together federal agencies to ensure a domestic supply of lithium batteries and to accelerate the development of a robust and secure domestic industrial base REF. Similarly, the Sustainable Aviation Fuel (SAF) Grand Challenge and the *National Clean Hydrogen Strategy and Roadmap* articulate steps needed to secure domestic industrial bases for those sustainable fuels, including mitigating safety and environmental risks and developing the necessary codes, standards, and workforce to enable this transition REF. As we transition from fossil fuels and internal combustion engine vehicles, it is important to create opportunities for workforce development that lead to well-paying jobs, including in manufacturing, vehicle fuel supply, and vehicle maintenance. A strong workforce will be critical to enable the transition and can be supported through training and education programs, including pre-apprenticeships, apprenticeships, and on-the-job training programs to create well-paying careers. Many of these types of programs can be targeted to ensure no one is left behind in the transition to a clean energy economy.

Improving vehicle efficiency and rapidly transitioning to zero-emission vehicles and fuels will be critical to achieving near- and long-term emission reduction goals and will require coordinated and sustainable actions from multiple stakeholders: the federal government, local governments, industry, and the general public. Multiple technology solutions will be needed for various travel modes and applications (see Section 5), and some technologies are not yet commercially viable. **Declaring clear cross-agency goals now, with support from industry, federal, and local planners, labor, and other stakeholders, will enable targeted investments in RD&D and deployment and infrastructure and the design of effective policies. It will also provide the lead time needed to complete this transformation and succeed in achieving a net-zero-emissions economy by 2050.**

SUSTAINABLE FUELS SUPPLY

Sustainable fuels offer an opportunity to replace petroleum and reduce GHG emissions. They provide the same advantages and flexibility of petroleum fuels, making them well-positioned to decarbonize applications like long-haul aviation and international maritime shipping that require energy-dense liquid fuels. Sustainable fuels can also be used with existing infrastructure and vehicles, helping to reduce emissions of legacy vehicles. Multiple production pathways exist to create sustainable fuels using renewable resources including corn, vegetable oils and animal fats, forestry and agriculture residues, wastes, and purpose-grown energy crops and algae, as well as from renewable electricity. However, the full environmental impact from scaling up feedstocks for sustainable fuels must be part of the full life-cycle emissions analysis, and the amount of available biomass, its geographic distribution, and technologies to sustainably convert that waste carbon into fuel are limited [REF]. The scale-up of sustainable fuel production requires developing and deploying advanced technologies to reduce cost and improve performance, while ensuring that life-cycle emissions and overall environmental and societal impacts are minimal. DOE's Bioenergy Technologies Office (BETO) estimates that over 50 billion gallons of sustainable biofuels (80% or more GHG emissions reduction) can be cost-effectively produced domestically by leveraging multiple production pathways [REF]. In a future in which on-road transportation will largely rely on EVs, 50 billion gallons of sustainable fuels would be enough to fully supply aviation, maritime, and rail demand in 2050, as shown in Figure 9. Although it is uncertain if all pathways will become cost effective, there is a significant effort to demonstrate that SAF can fully replace fossil fuels in aviation. Moreover, synthetic e-fuels (liquid fuels produced using captured carbon and hydrogen produced by electrolysis of water with renewable electricity) could also provide a viable pathway to produce sustainable fuels and increase supply. Depending on the final fuel product, sustainable fuels could address some local air pollution issues and offer a solution for transportation applications that lack other clean alternatives. Moreover, some sustainable fuel production pathways offer the opportunity to leverage carbon capture and storage (CCS) to further reduce GHGs and even achieve carbon-negative emissions [REF]. Finally, a robust bioenergy industry could also produce chemicals and products for the petroleum industry with significantly lower emissions. Sustainable fuels must be produced in a way that considers climate change, land use, water, and ecosystems implications, and planning will require cross-sectoral expertise and broad collaborations.

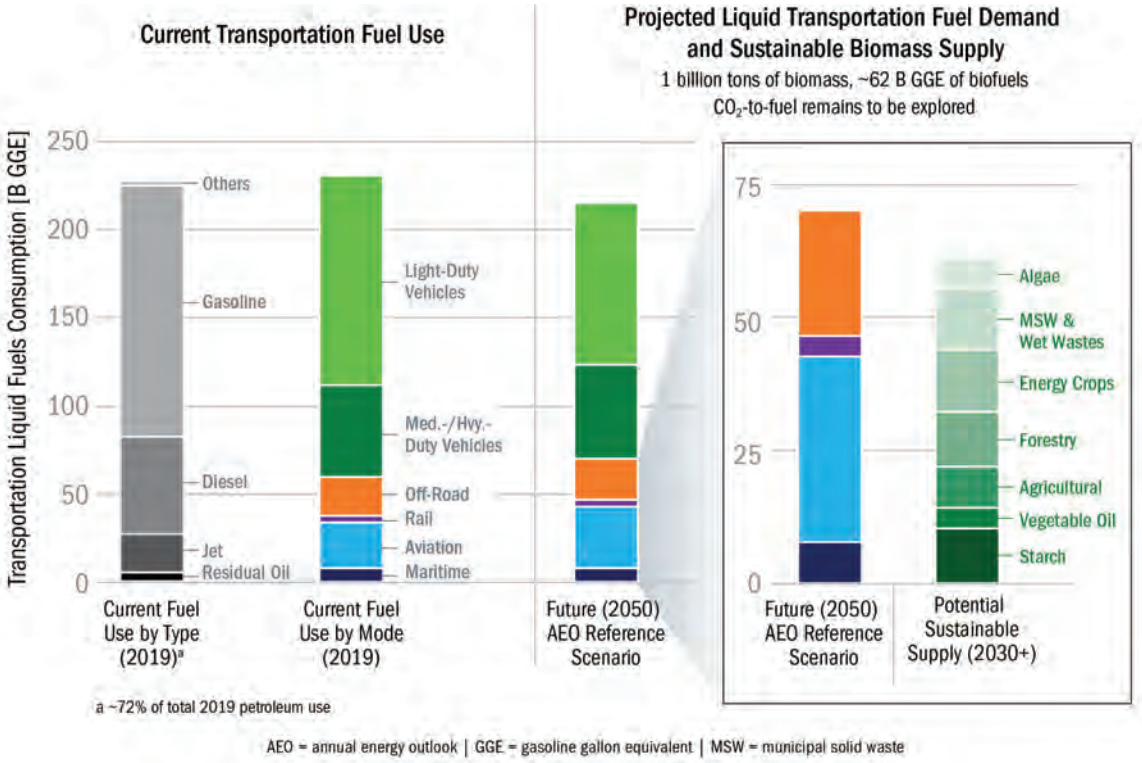


Figure 9. Current and projected liquid transportation fuel demand and sustainable biofuel supply. Note that the AEO reference case represents a business-as-usual perspective with limited changes from the current systems and does not reflect the transformative changes this Blueprint envisions. Data sources: EIA AEO Ref case [REF] and DOE BETO assessments [REF].

MODERNIZING AND CLEANING THE ELECTRICITY GRID

Future transportation systems must leverage affordable and abundant clean electricity to power battery EVs and produce clean hydrogen and sustainable fuels. While the exact mechanisms for creating a clean and resilient grid are out of scope for this document, clean electricity will be critical to decarbonizing transportation. Widespread transition away from fossil fuels for transportation will have far-reaching consequences for energy and electricity systems, including new opportunities for significant electricity load growth, while also requiring greater coordination for planning and operation between the transportation and electricity sectors. EVs are projected to become the largest source of load growth in the U.S. and could represent more than 25% of total electricity demand in 2050, up from <1% today [REF]. There are many aspects of our generation transmission and electricity distribution systems that are not yet ready to accommodate such load growth, requiring new analysis and solutions to plan and operate a reliable and affordable decarbonized grid. Effective integration of EVs with the power system—driven by interoperability standards, transparent electricity markets, and coordinated long-term planning among fleet operators and utilities—is necessary to ensure this growing demand for electricity can be supplied reliably and that grid planning fully considers the rapidly evolving transportation electricity demand. The impact on the grid is exacerbated for hydrogen and e-fuels, which require approximately twice and four times, respectively, the amount of clean electricity per mile of travel compared to direct use of electricity in EVs. New transportation loads can support the decarbonization of the grid, especially by complementing variable renewable energy sources with managed EV charging and other solutions [REF]. Similarly, flexible electrolyzer operation for hydrogen production and use of hydrogen as a long-duration energy storage solution could provide major benefits to the power grid [REF, REF]. EVs can also act as distributed energy storage devices, providing electricity back to the grid (V2G) or to other loads (V2X) to further support the power system and increase resiliency, especially during extreme events.

5. APPLYING THE STRATEGIES BY TRANSPORTATION MODE

Decarbonizing the transportation sector in the United States will require increasing convenience, improving efficiency, and transitioning to clean transportation options.

These strategies will need to be applied broadly and must consider all of the many interconnections between transportation systems, vehicles and technology, and the lives of people across a large and diverse country. This chapter provides an overview of solutions that can facilitate the transition to clean vehicles and fuels for all passenger and freight transportation modes.

The transportation sector includes a broad array of travel options for passenger and freight and is generally broken-down into seven specific sub-sectors or travel modes: light-duty vehicles, medium and heavy-duty trucks and buses, off-road vehicles and mobile equipment, rail, maritime vessels, aviation, and pipelines. Emissions from off-road vehicles and mobile equipment are often considered part of the industrial and agricultural sectors, but the solutions to decarbonize those vehicles will leverage and be aligned with solutions for other transportation vehicles. Therefore, for the purposes of this Blueprint, off-road vehicles and mobile equipment are considered part of the transportation sector. Similarly, while pipelines are not always considered part of the transportation sector, they carry the second largest quantity of freight (liquid and gaseous commodities) by tonnage in the United States of any of the seven modes and thus play a significant role in our transportation system [REF].

Each of these travel modes, or sub-sectors, presents unique technological challenges to transition to clean technologies, yet each also offers major opportunities to reduce emissions. The U.S. government has defined clear decarbonization paths for some, but not all, of the transportation subsectors. For example, the *2021 United States Aviation Climate Action Plan*, which was coordinated across multiple federal agencies, provides a strategy to help the federal government and industry achieve net-zero GHG aviation emissions by 2050. Other travel modes have less established pathways or partial goals and require additional research and policy coordination to establish viable routes to full decarbonization. Additionally, in some sub-sectors there are well-identified zero-emission technologies that are already transforming industries. For example, battery EVs, which have widespread global support, are successfully helping to decarbonize the light-duty vehicle sector. Their sales are rising, manufacturers are investing heavily in them, and consumer demand is rapidly growing. Other sectors will need to prioritize research in the near-term to identify the best technologies for decarbonization. The table on the next page summarizes current transportation emissions by mode and established federal emissions reduction goals and associated measures.

Transportation Mode	Share of Current Transportation Emissions	Federal GHG Emissions Reduction Goals
 Light-Duty Vehicles	49%	• Achieve 50% of new vehicle sales being zero-emission by 2030 supporting a pathway for full adoption, and ensure that new internal combustion engine vehicles are as efficient as possible • Deploy 500,000 EV chargers by 2030 REF • Ensure 100% federal fleet procurement be zero-emission by 2027 REF
 Medium and Heavy-Duty Trucks and Buses	21%	• Aim to have 30% of new vehicle sales be zero-emission by 2030 and 100% by 2040 REF • Ensure 100% federal fleet procurement is zero-emission by 2035 REF
 Off-road	10%	• Work to establish specific targets • Focus resources to develop technology pathways and set efficiency and zero-emissions vehicle and equipment targets
 Rail	2%	• Work to establish specific targets • Focus resources to develop technology pathways and set efficiency and zero-emissions vehicle targets • Encourage greater use for passenger and freight travel to reduce emissions from road vehicles
 Maritime	3%	• Continue to support the Zero-Emission Shipping Mission (ZESM) goals to ensure that 5% of the global deep-sea fleet are capable of using zero-emission fuels by 2030, at least 200 of these ships primarily use these fuels across the main deep sea shipping route, and 10 large trade ports covering at least three continents can supply zero-emission fuels by 2030 REF • Support the U.S. domestic maritime sector by performing more RD&D into sustainable fuels and technologies and incentivize U.S. commercial vessel operators to move towards lower GHG emissions • Work with countries in the International Maritime Organization to adopt a goal of achieving zero emissions from international shipping by 2050 REF
 Aviation	11%	• Reduce aviation emissions by 20% by 2030 when compared to a business-as-usual scenario • Achieve net-zero GHG emissions from the U.S. aviation sector by 2050 • Catalyze the production of at least three billion gallons of SAF per year by 2030 and ~35 billion gallons by 2050, enough to supply the entire sector REF

Pipelines	**4%**	• Work to establish specific targets • By 2036, repair or replace 1,000 miles of high-risk, leak-prone, community-owned legacy gas distribution pipeline infrastructure, as well as an estimated reduction of 1,000 metric tons of methane emissions REF • Eliminate leakages and enable use of pipelines for clean sustainable fuels
Total Sector	**100%**	• 80–100% Emissions Reductions by 2050 (**in line with the U.S. LTS**)

A. LIGHT-DUTY VEHICLES

With more than 280 million vehicles on the road, light-duty passenger vehicles—cars, SUVs, and pick-up trucks—are the primary mode of passenger travel in the country and account for over 75% of total U.S. passenger miles traveled REF, REF. LDVs are responsible for about 50% of total transportation energy use and emissions: over 120 billion gallons of gasoline consumed and over 1,000 MMT CO_2 emitted each year REF. Light-duty passenger vehicles are also major contributors to air pollution, which especially impacts people who live near highways. The fuel economy of new LDVs has improved by about 30% over the past 15 years, driven largely by regulations, including EPA GHG emissions standards and the Corporate Average Fuel Economy (CAFE) standards established by the National Highway Traffic Safety Administration. This improved fuel economy has translated into significant per-vehicle energy and emissions savings REF. However, sales trends toward larger and less-efficient vehicles have led to lower overall emission reductions than would have been achieved without these market shifts REF.

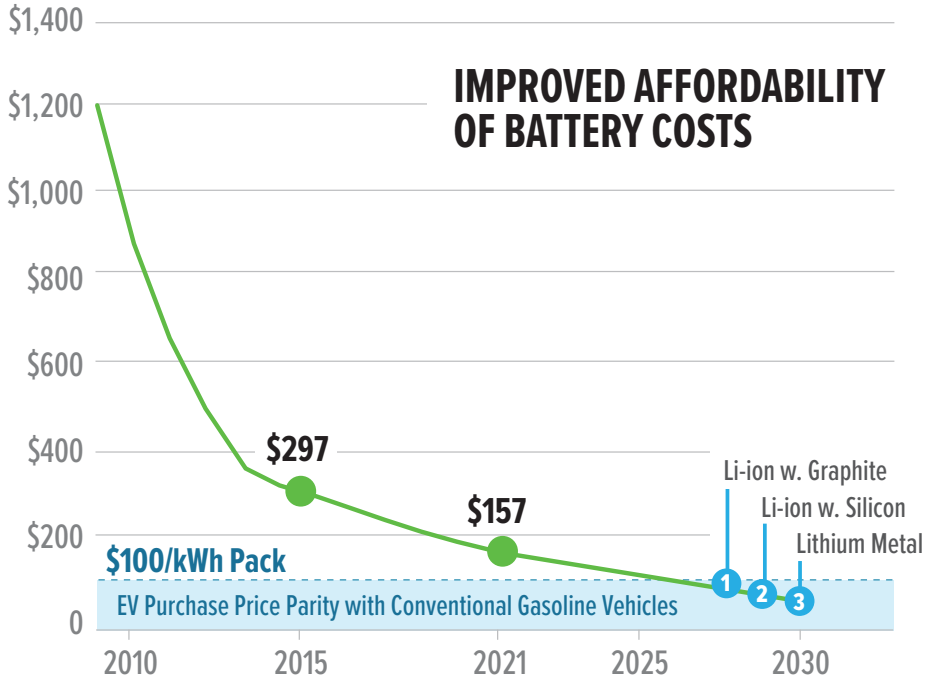
Achieving 2050 net-zero-emissions goals will require **transitioning new LDV sales to zero-emission EVs by the mid-2030s, and then rapidly replacing the legacy stock of higher-polluting fossil-based vehicles with zero-emission EVs**. Ensuring that fossil fuel vehicles sold in the interim are as efficient as possible will further reduce energy needs and emissions during the transition. The rate of EV adoption and speed of vehicle replacement will affect the degree to which LDVs use liquid fuels in the decades to come. Thus, sustainable fuels provide an additional opportunity to reduce the emissions of legacy internal combustion engine vehicles still on the road in 2050 and beyond.

Sales of plug-in battery EVs have been rapidly increasing in recent years thanks to technology improvements and lower costs (especially for batteries, as shown in Figure 10), supporting policies, and increased availability of charging infrastructure REF. In 2021, U.S. EV sales more than doubled to over half a million vehicles sold, reaching 4.5% of the total market share. Globally, EVs accounted for 9% of new vehicle sales in 2021, with Europe and China representing the two largest EV markets REF. In California, where support for EVs has been substantial, EVs accounted for about 18% of vehicle sales in the first half of 2022 REF. Despite this progress, more than 99% of LDVs on the road in America today still rely on gasoline[17] or diesel fuels, since only a small fraction of vehicles are replaced each year. A rapid acceleration of new EV sales will be critical to achieving decarbonization goals.

[17] *Motor gasoline is a blend of 90% fossil gasoline and 10% ethanol.*

With sales increasing globally and manufacturers planning to spend more than half a trillion dollars on EV and battery development through 2030 [REF], it is clear that EVs are a viable technology to dramatically reduce GHG emissions from LDVs by 2050. The number of EV models available is also rapidly increasing, with more than 100 models currently or soon-to-be available across multiple vehicle classes, including larger SUVs and pick-up trucks [REF].

The outlook for EV growth for personal and commercial vehicles is increasingly positive, and over time the environmental benefits of zero-emission vehicles combined with progressive grid decarbonization are expected to compound [REF]. Further technological progress will accelerate EV competitiveness for additional applications and increase affordability for all consumers. Batteries are projected to continue to improve and become cheaper, especially as domestic minerals processing and cell production capacity increases, enabling further competitiveness over the next decade. Still, significant challenges remain to achieving high market penetration of EVs over the next decades, and multiple actions are needed to achieve 2030 and 2050 goals:



Vehicle battery costs dropped 90% over the ten-year period ending in 2020, creating less expensive overall electric vehicle costs. Studies indicate that when battery costs reach an average of $100/kWh (or $60/kWh per cell), EV purchase prices (MSRP) will reach parity with gasoline-powered vehicles. Multiple technology pathways exist to achieve this cost threshold, including lithium-ion with graphite, lithium-ion with silicon, and lithium metal.

Figure 10. Battery cost evolution and projections (2021 USD per pack-level usable kilowatt-hour (kWh)) Data source: DOE Vehicle Technologies Office [REF]. Investments, including from the BIL, IRA, and the CHIPS and Science Acts, are ensuring battery costs continue to decline and that reliable and secure supply chains and manufacturing are available.

1. **Implement policy and regulation** to expand the market share and use of EVs. Government, industry, and labor set a target of 50% new light-duty EV sales share by 2030 [REF]. The actions needed to achieve this goal will demonstrate the viability and underlying benefits of EVs, including lower costs, and put us on a pathway for 100% EV adoption. EPA and DOT are currently evaluating future GHG emissions and fuel economy policies that will support this transition while ensuring that new internal

combustion engine vehicles sold in the interim are as efficient as is feasible. At the same time, tax credits and manufacturing incentives established by the IRA are designed to reduce the costs of new and used EVs and strengthen supply chains and domestic manufacturing. The federal government is also leveraging its scale and procurement power to transition the federal fleet to EVs, with the goal of having 100% of its vehicle acquisitions for its fleet of more than 600,000 vehicles be zero-emission vehicles by 2035 (2027 for LDVs) REF. Regional, state, local, and Tribal actions can also enable more rapid zero-emission vehicle transitions. For example, 13 states—California, Colorado, Connecticut, Maine, Maryland, Massachusetts, Minnesota, New Jersey, New York, Oregon, Rhode Island, Vermont, and Washington—have adopted mandates on automakers' sales of zero-emission vehicles, charting a course toward 100% EV sales REF. Additional policy and vehicle incentives may also be needed to encourage legacy fleet turnover to EVs, at least until the additional purchase cost of EVs is sufficiently lowered to achieve widespread adoption. EVs generally have much lower operating costs, so educating consumers on the total cost of EV ownership relative to conventional vehicles (rather than simply comparing purchase prices) could also speed adoption.

2. **Continue EV charging infrastructure investments and planning** to ensure every individual and business has access to convenient and affordable charging whenever needed. These actions will entail an equitable expansion of access to charging, including widespread public charging solutions for those without access to home charging (workplace, curbside, multi-unit buildings with shared parking), and ubiquitous fast charging networks. A major expansion of the U.S. charging ecosystem will offer opportunities to rapidly charge EVs during long trips, ensure consistent and convenient access to charging, and provide charging assurance for all individuals, including those without personal access to vehicle chargers. Moreover, investments must support network maintenance to ensure that a well-functioning and reliable charging system is available at all times.

   The Joint Office of Energy and Transportation will be a critical part of this effort. Created through the BIL to coordinate efforts between DOE and DOT, the Joint Office supports the president's goal of deploying 500,000 EV chargers by 2030. Combining the expertise of both agencies, the Joint Office is helping to implement BIL programs that will jumpstart a national network of EV charging along our highways and throughout our communities. In collaboration with regional, state, local, and Tribal jurisdictions, the Joint Office can help ensure that all Americans have full access to charging infrastructure. EPA is working with the Joint Office to help communities plan for investments in EV charging infrastructure and to ensure chargers are distributed equitably and in ways that will bring additional co-benefits. Local

and state governments can update ordinances to encourage or require vehicle chargers, particularly at multi-unit dwellings or commercial buildings that also support interoperability. Additionally, it is imperative to develop and implement solutions for effective vehicle-grid integration, as EVs are expected to become one of the largest electricity load categories by 2050. Managed charging and incentivizing charging at times that are beneficial for the grid can provide valuable demand-side flexibility to better design and operate the power system, reducing electricity costs for all and increasing resiliency.

3. **Fund research and innovation** that will continue to improve vehicle, battery, and charger performance and reduce costs, and leverage large investments from BIL, IRA, and the CHIPS and Science Act to develop a domestic EV manufacturing supply chain that is reliable, secure, and creates equitable clean-energy manufacturing jobs, as articulated in the *National Blueprint for Lithium Batteries* REF. Based on its research and development activities, DOE projects that new technologies under development will reduce battery costs to $80–100/kWh over the next decade, which is expected to allow EVs to achieve purchase price parity with conventional vehicles REF. Moreover, EVs offer lower operational (fuel and maintenance) costs by being more efficient and having fewer moving parts than conventional vehicles. These benefits offer significant cost savings, especially for consumers who own older vehicles REF. DOE estimates the maintenance cost of EVs is 40% cheaper than for internal combustion engine vehicles, which can amount to thousands of dollars of savings over the course of a vehicle's lifetime REF. Additional research and innovation will be required to accelerate these trends in efficiency and performance, and to continue developing future generations of battery technology.

B. MEDIUM AND HEAVY-DUTY ON-ROAD TRUCKS AND BUSES

Medium duty and heavy-duty vehicles include a wide range of vehicles that vary in size, from heavy-duty pickup trucks to long-haul semi-trucks. The use of these vehicles is correspondingly diverse, as this category encompasses vehicles used for local delivery, refuse collection, public transportation, long-haul goods delivery, and many other purposes. While MHDVs represent only 5% of total vehicles on the road, they are responsible for an outsized 21% of transportation emissions, making them the second-largest emissions contributor behind only light-duty vehicles. And within MHDVs, a small portion—about 10% of heavy trucks with high utilization—is responsible for approximately 50% of total MHDV emissions REF. MHDVs are also a major source of criteria pollutant emissions, particularly along busy corridors that are close to disadvantaged communities. These emissions cause increased asthma and lung disease rates among these populations and have been linked to thousands of premature deaths. They also contribute to the inability of some areas to achieve compliance with federal ambient area quality standards REF, REF, putting residents at disproportionate risk for additional health impacts.

Although nearly all MHDVs on the road today rely on internal combustion engines fueled with diesel (81%), gasoline (17%), or natural gas (1%) REF, many manufacturers are investing heavily in zero-emission

Virtually all MHDVs on the road today rely on internal combustion engines fueled with

DIESEL (81%)

GASOLINE (17%)

NATURAL GAS (1%)

MHDVs that use battery electric or hydrogen fuel cell electric powertrains. At COP27 on November 16, 2022, the United States joined the Global Memorandum of Understanding on Zero-Emission Medium- and Heavy-Duty Vehicles REF. First introduced at COP26, the Global MOU puts countries on a path to 100% new zero-emission MHDV sales by 2040 at the latest, with an interim goal of at least 30% new sales by 2030 REF.

Since MHDVs are used for a variety of purposes, there will likely be a suite of zero-emission technology solutions in the future to cover various use cases. Based on expectations of current technological progress, smaller vehicles with lower utilization will likely be EVs REF. Other manufacturers are investing in hydrogen powertrains using fuel cells. While not currently commercially viable for freight applications, hydrogen vehicles are appealing for future long-haul operations requiring greater vehicle range and faster refueling times. There is also ongoing RD&D and deployment focused on hydrogen use in internal combustion engines, which could improve deployment and support the build out of hydrogen fueling infrastructure. Research and development are also improving durability and reducing costs of fuel cells, which will enable major efficiency improvements. Fleet operators are sensitive to fuel and maintenance costs, which could make efficient EVs even more appealing and result in a more rapid shift toward EVs. With continued improvements in vehicle and fuel technologies (in line with DOE targets for zero-emission vehicle technologies and fuels costs and performance vetted with industry), zero-emission vehicles in all MHDV classes can reach total-cost-of-driving parity with conventional diesel vehicles by 2035 REF.

Sustainable fuels may also be an option for some MHDVs, particularly for remote applications and for legacy vehicles relying on internal combustion engines. The historically slow turnover rate for many MHDVs means that new technologies may not replace diesel engines for several decades and that disseminating new technology across the MHDV fleet will be a slow process if market forces or policy decisions do not accelerate vehicle turnover. Sustainable fuels could help alleviate this turnover challenge by providing low-carbon solutions that are compatible with existing vehicles. To achieve 2030 and 2050 goals, the current MHDV reliance on diesel and gasoline must shift to zero-emission vehicles and sustainable fuels. This shift can be achieved in part through decisive and coordinated actions, including:

1. **Fund research and innovation** to develop viable technologies to replace fossil-fuel vehicles for all MHDV applications. It is vital to continue to support research, design, and development toward lower-cost and higher-energy-density batteries and fuel cell applications, as well as the use of clean hydrogen and sustainable fuels to fully decarbonize

the MHDV sector. For example, DOE is investing hundreds of millions of dollars to support the next stage of the SuperTruck initiative aimed at electrifying freight trucking [REF]. The department is also collaborating with industry through the 21st Century Truck Partnership, which is shaping a national vision for trucks and buses that safely and cost-effectively move larger volumes of freight and greater numbers of passengers while emitting little or no pollution and dramatically reducing dependency on petroleum [REF]. DOE is also coordinating with partners internationally on the development of the new Megawatt Charging System standard, which will enable compatibility between automakers and charging equipment installed in the United States. Research can also help improve access to big data, such as information collected from GPS navigation services and user mobile phone applications, to inform strategies to reduce GHG emissions.

2. **Implement policy and regulation** to reduce new vehicle GHG and criteria emissions and set ambitious targets for transitioning to zero-emissions vehicles on a timeline consistent with achieving economy-wide 2030 and 2050 emissions reduction goals. This effort should account for the wide range of MHDV vehicles and applications. One example of such regulatory action is EPA's Clean Trucks Plan, which will reduce the emissions of GHGs and other harmful pollutants through a series of rulemakings [REF]. Another example is the fuel efficiency standards for MHDVs, which DOT issued jointly with EPA. Additionally, the government will continue to provide grants and other incentives for low-emission or zero-emission vehicles (e.g., the Congestion Mitigation and Air Quality Program, the Low or No Emission Vehicle Program, the Diesel Emission Reduction ACT (DERA), SmartWay, and the Clean School Bus Program [REF]). Regional, state, local, and Tribal actions to enable more rapid zero-emission MHDV transitions can further support these programs. For example, 17 states and the District of Columbia and the Canadian province of Quebec are working collaboratively through the Zero Emission Vehicle (ZEV) Task Force to advance and accelerate the market for electric MHDVs [REF]. The committed signatories have stressed the need for market-enabled adoptions, including innovative financing models and additional funding sources and actions to encourage fleet purchases. Together, they have emphasized accelerating deployments of zero-emission trucks and buses in disadvantaged communities. In addition to multi-state actions, strategies can be further identified through regional, state, local, and Tribal climate action plans that consider freight planning, and state freight plans should include GHG emissions-reduction strategies. Regional coordination formalized in such planning documents will also help support this transition by reflecting multi-jurisdictional capacities. Additionally, fleet transition plans can accelerate the shift to zero-emission vehicles. The IRA directs EPA to award grants and rebates for zero-emissions heavy duty vehicles. And under the BIL, zero-emission vehicle project grant applications for the Buses and Bus Facilities Program and the Low or No Emission Vehicle Program must include a Zero-Emission Fleet Transition Plan. Innovative freight strategies, such as green loading zones, zero- or low-emissions delivery zones, and restricted multi-use lanes, can also incentivize the use of zero- or low-carbon freight options in urban areas.

The government will continue to provide grants and other incentives for low-emission or zero-emission vehicles.

3. **Invest in strategic demonstration and deployment** to support the build-out of interoperable EV charging and refueling infrastructure through coordinated planning, policy, and funding opportunities. An unprecedented level of collaboration is needed among fleet operators, facilities throughout the freight transportation network, infrastructure providers, and electric utilities to ensure energy systems can accommodate the charging demands associated with the rollout of zero-emission MHDVs during the latter half of this decade. The Joint Office is offering technical assistance to school districts and transit operators for deployment of electric school and transit buses under BIL programs. For freight applications, vehicles can leverage central fueling facilities, and accordingly there will need to be an initial focus on large truck depots and key truck corridors that carry high volumes of freight from ports. These centrally located fueling facilities and focused uses will have the strongest business cases, particularly since they can help reduce the emissions and noise impacts in urban areas that disproportionately burden disadvantaged communities. The BIL created a new Reduction of Truck Emissions at Port Facilities grant program, which will support electrification at ports. For long-haul freight, long-term strategies may involve multi-state considerations for on-the-road charging stations and other infrastructure needs to support zero-emission fueling applications of long-haul freight. An accelerated decarbonization transition will require advancing the adoption of EVs and the deployment of a supporting charging and fueling infrastructure concurrently, so the growth of each component complements the other. Sustainable fuel readiness planning can help local and regional governments identify and address barriers to adoption, such as insufficient supporting infrastructure.

C. OFF-ROAD VEHICLES AND MOBILE EQUIPMENT

Off-road vehicles are primarily designed to operate away from existing roadways. This category contains a disparate and very diverse set of vehicles and use cases, including construction and mining equipment (36% of off-road energy use), industrial equipment (23%), agriculture equipment (21%), lawn and garden equipment (15%), and recreational vehicles (4%) [REF]. Diesel provides the majority (79%) of the total fuel that off-road vehicles consume today, especially for agricultural, construction and mining and industrial equipment, with gasoline (8%), liquified petroleum gas (11%) and compressed natural gas (2%) making up the remaining fuel consumption. Recreational vehicles, in contrast, are primarily fueled by gasoline [REF]. Combined, off-road vehicles are responsible for 10% of transportation GHG emissions. Due to the nature of these vehicles and the work they do, the emissions from these vehicles are often mapped to the industrial and agriculture sectors in emissions accounting. **Off-road vehicle and mobile equipment are included with transportation in this Blueprint since the technology solutions required to decarbonize them are well-aligned with solutions used for other transportation modes.**

There are a wide range of engine sizes, power requirements, duty cycles, and vehicle applications

to be considered in the pathways for decarbonizing off-road vehicles. Unlike most on-road vehicles, an off-road vehicle's engine typically provides power to propel the vehicle and to perform auxiliary work, such as digging or harvesting. As a result, different applications in the off-road sector have specific requirements for ruggedness, durability, and other operational constraints. Strategies for decarbonizing the off-road sector will leverage technologies similar to other sectors, including battery electric and fuel cell EVs and sustainable fuels. However, the exact roles of different technologies and solutions across these use cases have many nuances. A deeper understanding of real-world operations and requirements is needed to enable comprehensive data-driven analysis that can identify viable pathways at the vehicle and system level. Hybridization can also help optimize engine operation, allow for engine downsizing support auxiliary power needs, and increase overall efficiency. Finally, automation could offer opportunities to optimize vehicle design and use to reduce emissions.

Electrification is already taking place across parts of the off-road sector, particularly household lawn and garden equipment. As battery technology progresses, more opportunities for electrification in this wide category of vehicles will emerge. Large vehicles that run continuously or operate in remote areas far from refueling infrastructure might require hydrogen or sustainable liquid fuels. Building infrastructure that brings sustainable fuel and/or electricity to work sites (or produces it there) will be a key strategy for decarbonizing the off-road sector.

Significant challenges remain to develop, demonstrate, and deploy off-road vehicle decarbonization solutions aligned with overall 2030 and 2050 goals. Strategies for addressing those challenges include:

1. **Increase targeted research and innovation efforts** to better understand the spectrum of available technologies and collect real-world operational data to enable a deeper understanding of off-road vehicle and mobile equipment requirements. New analytical tools must also be developed to perform technical analyses that identify viable pathways for zero-emission vehicles to replace fossil fuel vehicles or to find opportunities to improve efficiency for off-road applications in which zero-emissions technologies are not viable. Targets for future zero-emission technologies—such as batteries and fuel cells performance to match off-road vehicle and mobile equipment requirements—also need to be identified. Finally, solutions will be needed to increase efficiency, reduce operational costs, and promote electrification (including by leveraging vehicle automation) in complex work settings. Research efforts should also focus on demonstrating the viability of zero-emission off-road and mobile equipment applications during early market phases by leveraging available on-road vehicle and infrastructure technologies.

2. **Implement policy and regulations**, including establishing GHG and efficiency standards for off-road vehicles and mobile equipment and setting ambitious targets for transitioning to zero- or low-emissions technologies. These efforts will help drive down emissions and accelerate the transition to clean vehicles and equipment. Standards must be comprehensive and cover the entire range of vehicles, manufacturers, and applications. New mechanisms to ensure compliance and a framework to assess life-cycle emissions may also be required. Federal and local-level policy are necessary, especially for areas that do not meet national ambient air quality standards, as is funding to incentivize and support early adoption and infrastructure deployment and to encourage turnover of existing fossil fuel-powered vehicles, which might otherwise remain in use for decades.

3. **Invest in strategic demonstration** to understand EV charging and clean fuel refueling infrastructure needs, and support deployment through coordinated planning, policy, and funding opportunities. Providing reliable access to electricity and clean fuels for off-road vehicles and mobile equipment will require addressing varied and unique usage challenges, especially in remote locations, extreme conditions, and temporary sites. Electrification will be easier for applications that can leverage existing electricity access, such as applications at residential or commercial buildings. Some off-road vehicles may be able to leverage refueling facilities for other transportation applications at or near places such as ports or along highways. In contrast, providing charging and access to clean fuels in remote locations, temporary sites, or for equipment intended to provide back-up power and resilience will require new and innovative solutions that need to be developed and demonstrated. Developing and demonstrating reliable and effective charging and refueling solutions for the varied off-road vehicles and mobile equipment is critical to enable the decarbonization of the sector.

D. RAIL

The United States has the largest rail network in the world, and it is used primarily to support freight movement. Although passenger rail does not currently account for a relatively large proportion of passenger miles traveled relative to other modes, it is critical to addressing traffic congestion in and between cities and can play an important role in decarbonizing both freight and passenger movements REF. Passenger rail services include local passenger travel on commuter and transit rail services in cities where it is available, and some intercity travel. In the U.S., there are very limited higher-speed rail options. Freight accounted for 91% of all domestic rail-use energy in 2019. Rail makes up approximately 28% of U.S. freight movement by ton-miles but only accounts for about 2% of total U.S. transportation emissions thanks to its significantly higher efficiency than freight trucking. Rail is also an energy-efficient mode of passenger transportation, offering a cleaner option than single-occupancy vehicles and air travel REF.

Identifying transformation pathways can also help to set ambitious goals and inform development of regulation to reduce rail emissions.

While electric rail technologies are widely used worldwide, in the U.S., freight rail carriers almost exclusively use diesel locomotives. Intercity passenger and commuter carriers also heavily rely on diesel, though there are some partially or fully electrified

lines. Most rail systems that provide local public transportation, such as light rail and streetcars, are electrified but represent less than 5% of rail energy use [REF]. The rail industry is currently exploring opportunities to maintain its comparative energy-use advantage on a ton-mile basis by transitioning to direct use of electricity (e.g., overhead catenary charging, third-rail systems), batteries, hydrogen fuels, sustainable fuels, or hybrid solutions. Full electrification via catenary systems used in other countries has been hindered by the long distances and relatively low traffic on U.S. railways. Diesel alternatives for use in the U.S. freight rail industry are primarily in demonstration stages and not yet widely available, although there are interim opportunities to advance fleet technologies by retrofitting locomotives and using modular hybridization. For example, there are battery-powered locomotives in use (primarily in switch yards), and additional pilot projects using battery-powered locomotives or hydrogen fuel cells are underway [REF]. Sustainable fuels can play a key role in reducing rail emissions, especially in the near and medium terms, but they are currently not cost competitive.

While electrification is more common in the U.S. for passenger rail than for freight rail, commuter rail is not fully electrified. As such, the electrification of commuter rail fleets offers promising opportunities for further emissions reduction. Longer-distance rail for passengers and freight may require fuel technologies in addition to electric batteries and fuel cells to achieve emissions reductions goals, and pathways to total decarbonization still need to be determined. Priority actions and levers to decarbonize rail include:

1. **Infrastructure investments** in electric locomotives and the expansion of electrification corridors to help to accelerate the zero-emission transition. Interoperability and infrastructure for clean fuel technology adoption will facilitate efforts. Federal funding may be used to purchase more efficient and cleaner trains and to implement solutions that improve system-level efficiency. Other investments that will maximize emissions reductions include building strong domestic rail equipment supply chains for electric and alternatively fueled locomotives and railcars and supporting the development and deployment of sustainable fuels.

2. **Multi-stakeholder collaborations** to accelerate the deployment of rail technologies that reduce emissions and increase efficiency. Ambitious and shared targets and regulation for the rail sector can help minimize investment risk and catalyze decarbonization actions. Existing industry partnerships such as EPA's SmartWay Program are designed to improve efficiency and reduce emissions in the freight network. State freight advisory committees and rail and freight plans present opportunities for stakeholders to help

identify pathways to transition fleets and modernize rail systems.

3. **Research and innovation** to advance technology through pilot projects, greater infrastructure investments, and continued policy and regulation support that helps accelerate the growth of electrification of the U.S. passenger rail system. Freight rail research should be prioritized to determine the most promising paths to decarbonization, including a focus on sustainable fuels and the design and manufacture of new locomotive propulsion and fueling systems. The four agencies and partners should identify transformative pathways that can help inform the development of ambitious goals and regulation to reduce rail emissions. The continued collection of real-world operational data to better understand vehicle requirements and develop models and tools to perform technical analyses can help to identify the most viable pathways for clean technology solutions to replace diesel locomotives.

E. MARITIME VESSELS

Maritime transportation moves people and freight via waterways. The U.S. maritime fleet is comprised of numerous vessel types across its domestic shipping, international shipping, and recreational boat segments. While the fleet of U.S.-flagged ocean-going vessels is relatively small, the fleet of vessels that operate under U.S. registry along our coasts and inland waterways is significantly larger. There are approximately 12 million privately owned recreational boats (USCG Office of Auxiliary and Boating Safety 2019) and 38,000 commercial vessels, such as tugboats, containerships, and ferries (USCG Maritime Information Exchange 2021), in the U.S. maritime sector. Recreational boats usually burn gasoline, while larger vessels rely on an almost equal share of diesel and residual oil, the latter of which is generally used for international voyages. A small fraction of maritime energy use comes from liquified natural gas. According to EPA estimates, half of U.S. marine vessel carbon emissions are from international shipping (including from fuel purchased in the U.S. for international voyages), roughly 30% is from domestic shipping, and the remaining 20% is from recreational boats. Although these numbers reflect the best available information, accurate accounting of maritime emissions is challenging due to the complex international nature of vessel operations and ownership. Emissions from multimodal equipment at ports largely contribute to poor air quality and environmental justice issues for millions of people living in near-port communities, many of which often consist of disadvantaged and underserved populations.

The maritime industry is international in scope, with the largest share of GHG emissions originating from international voyages. Therefore, effective decarbonization will require intergovernmental collaboration that aligns with industry and community needs. During the 2021 Leaders Summit on Climate, President Biden pledged to work with countries in the International Maritime Organization to revise the organization's current decarbonization strategy and adopt a new goal of zero emissions (on a life-cycle basis) from the sector by 2050 [REF].

Despite the variety of potential decarbonization fuels, technologies, and policies under development, the best pathway for decarbonizing the maritime sector is unclear. New maritime technologies can be slow to be adopted, particularly when safety and operational standards still need to be established. Vessels have a long fleet turnover time—30 years or more—so understanding the costs, standards, and requirements is critical for long-term investment planning. Decarbonizing the sector by 2050 will require innovative practices, targeted regulations, and a strong and immediate commitment to innovation and deployment of new and emerging technologies.

Efforts are underway globally to significantly reduce the GHG emissions of vessels and port activities, while considering vessel types and size, routes, and other operational constraints. Accordingly, a variety of approaches are likely necessary to decarbonize the maritime sector. There are currently several viable energy-efficient technologies, including battery electrification options for smaller vessels and recreational boats, and in-port shore power or "cold ironing" using clean, onshore energy sources. There are also a select few clean and affordable fuels that can be deployed now for limited vessel types. Once alternative fuels and technologies have been demonstrated, a significant effort will be needed to support deployment, adoption, and the roll-out of required infrastructure.

Decarbonizing the sector by 2050 will require innovative practices and a strong, immediate commitment to innovation and deployment of new and emerging technologies.

Priority actions and levers to decarbonize maritime include:

1. **Research and innovation** on viable alternative fuels and new technologies to determine the most promising paths to decarbonizing the maritime sector. Additional research can identify and expedite effective solutions for different vessel types and applications. Extensive performance and operations data on the total life-cycle emissions from new shipping technologies and alternative fuels should be collected from real-world settings and shared widely with stakeholders. New models and tools need to be developed to characterize and forecast critical aspects of the maritime industry, including emissions, energy use, costs, or other impacts and externalities to inform decisions and investments. Promising fuels and technologies that can support maritime decarbonization include:
    a. **Sustainable liquid and gaseous fuels**. These include certain types of biofuels, ammonia, hydrogen, and methanol. Some biofuels and biofuel blends are drop-in replacements for traditional fossil fuels and offer the most substantial immediate GHG emissions reductions, as well as the opportunity to complement sustainable aviation fuel production and associated investments. Hydrogen, ammonia, and methanol are other promising fuel alternatives, but more research is needed to use and supply these fuels, ensure that they have low life-cycle emissions, and verify that they do not increase criteria pollutant emissions.
    b. **Electric vessels.** Electric powertrains and batteries can be used to augment power on certain ships, especially smaller boats, offering high efficiency and zero stack emissions.

c. **Cold-ironing.** Cold-ironing of larger vessels ("plugging-in" while at port to utilize clean electricity generated onshore) can reduce emissions and greatly improve local air quality at ports.
d. **Energy efficiency and hybridization:** There are a number of existing technologies that can help improve overall vessel efficiency, including electric powertrain hybridization, waste heat recovery, improved hull design or coatings, higher-efficiency HVAC, and power management systems. Vessel speed reduction and other operational strategies can also help.
e. **Renewable energy:** Renewable energy from solar, wind, and nuclear power is being investigated for onboard use to provide supplemental propulsion or auxiliary electrical power generation to offset fuel consumption.
f. **Exhaust treatment and carbon capture:** Post-combustion exhaust treatment measures can limit emissions of criteria pollutants, and CO_2 capture can potentially capture some or all CO_2 emissions; however, there are challenges with capture technologies, onboard storage, and portside supply chain logistics that must be resolved.

2. **International and domestic stakeholder engagement** to develop and implement effective decarbonization strategies and regulation. Coordination between the federal government and key outside stakeholders, such as vessel owner/operators, ports, terminal operators, and energy providers, is necessary. Given the international nature of the maritime sector, it is essential to build well-functioning domestic and international stakeholder collaborations to better understand industry challenges and needs and to enable the investments necessary to transition to low-carbon maritime operations. The federal government is engaging with international stakeholders through DOT's Maritime Administration, which collaborates with the International Maritime Organization and the Quad Shipping Task Force, and through the government's participation in the Clydebank Declaration REF, REF, REF. DOE is co-leading the Mission Innovation Zero-Emission Shipping Mission, which aims to transition at least 5% of the global deep-sea fleet to zero-emission fuels and ensure that at least 10 ports on three continents can supply zero-emission fuels by 2030 REF.

3. **Infrastructure investments and improved design and planning** in clean technologies and fuels for maritime applications funded through new and existing federal programs. Resources are necessary for activities including clean vessel upgrades, retrofits, or conversions, and essential charging and refueling infrastructure. For example, the Inflation Reduction Act allocates funding for ports to develop climate action plans and purchase zero-emission equipment. Similarly, the Port Infrastructure Development Program (PIDP) offers grants for port and terminal infrastructure improvements REF. Federal agencies can also provide technical assistance to interested applicants and coordinated planning across the maritime industry to ensure resources are used as efficiently and effectively as possible.

F. AVIATION

The combustion of jet fuel from domestic and international aviation is responsible for more than 10% of total transportation GHG emissions in the U.S. REF, REF. The CO_2 emissions from domestic commercial flights are roughly comparable to the CO_2 emissions of international commercial flights coming to and leaving from the U.S. REF.

1. The *2021 United States Aviation Climate Action Plan* REF describes a whole-of-government approach to achieve net-zero emissions in the U.S. aviation sector by 2050. The plan builds on individual and sector-wide commitments announced by the U.S. aviation industry and highlights specific actions and policy measures to foster innovation and drive change across the entire domestic aviation sector. The plan identifies key measures required to meet this challenging goal, including sector growth rate management, new aircraft and engine technologies to reduce fuel requirements, operational efficiency improvements, and switching to sustainable aviation fuels that would result in significant life-cycle emissions reductions and that are expected to account for the majority of aviation emissions reductions.

As aviation demand continues to grow, the development and introduction of new aircraft and engines by manufacturers will be critical to reducing future CO_2 emissions (see Section 3b). With investments by industry and the federal government, new, more fuel-efficient aircraft could be introduced. Through the Sustainable Flight National Partnership (SFNP), the government will work with industry to demonstrate a suite of aircraft technologies by 2030 that achieve a 30% improvement in fuel efficiency compared to today's best-in-class aircraft.

An increase in aviation demand could also lead to additional congestion and inefficient air traffic management-related fuel usage. Without continued investment in operational improvements, excess per-flight fuel usage is expected to increase. Even though the National Airspace System is already highly efficient, there are areas for improvement in all operational phases of flight to reduce fuel usage. Further optimization of surface, takeoff, cruise, and landing operations is possible with continued infrastructure investments and the development of improved operational concepts. As with any changes to the aviation system, operational procedure upgrades would need to ensure the safety of all aircraft operations and account for local environmental factors, such as noise and pollutants affecting air quality.

Sustainable aviation fuels will be critical to the long-term decarbonization of aviation. SAFs are fully interchangeable, drop-in liquid hydrocarbon fuels with the same performance and safety as conventional jet fuels produced from petroleum. They can be deployed in existing infrastructure, engines, and aircraft. SAF can be created from renewable or waste materials and have been shown to reduce life-cycle GHG emissions by at least 50% relative to conventional jet fuel and

The combustion of jet fuel from domestic and international aviation is responsible for more than 10% of total transportation GHG emissions in the U.S.

potentially 100% if low-carbon technologies such as climate-smart agricultural practices, low-carbon electricity and hydrogen usage, or CCS are used REF (see textbox on page 54). Efforts are ongoing to approve the use of 100% SAF in today's fleet of aircraft, thus enabling the decarbonization of aviation without a change in its underlying infrastructure.

The SAF production industry is still developing, a trend spurred on by the SAF Grand Challenge. That partnership among the federal government, the airline industry, and partners established a goal of increasing U.S. SAF production to at least 3 billion gallons per year by 2030. This would put the U.S. on a path to produce and use about 35 billion gallons of SAF by 2050, which would decarbonize the aviation sector almost entirely REF. SAF production will also be aided by the new tax credits and a competitive grant program the IRA established.

In addition to SAF, battery electrification and hydrogen fuel are also potential options for replacing petroleum-based aviation fuels. These technologies can play an important role in the coming decades by decarbonizing short-distance flights and dedicated regional cargo routes. However, they are not expected to provide a solution by 2050 for the medium- and long-haul flights that generate most of the aviation sector's carbon emissions. At present, flights less than 500 nautical miles represent 50% of operations but only 15% of total fuel usage. Conversely, flights greater than 1,000 nautical miles represent 20% of operations and 65% of total fuel usage. An analysis conducted by the United Nations' International Civil Aviation Organization (ICAO) on global aviation showed that even if a short-range hydrogen aircraft were to enter the fleet in the mid-2030s, hydrogen aircraft as a whole would not have a measurable effect on aviation CO_2 emissions before 2050 REF. Since the majority of aviation CO_2 emissions stem from long-haul operations and fleet turnover is slow—an average of 30 years for most aircraft—drop-in SAF is the most viable pathway for rapid decarbonization of the aviation sector.

Finally, aviation contributes to climate impacts beyond GHG emissions. It also creates high-altitude emissions and aviation-induced cloudiness that can affect the climate. Additional research is needed to quantify the GHG impact from these factors and to understand how SAF, improved technologies, and operational procedure changes might mitigate climate impact without increasing CO_2 emissions from added fuel usage.

The *Sustainable Aviation Fuel Grand Challenge Roadmap*, developed by DOE, EPA, the U.S. Department of Agriculture and DOT's Federal Aviation Administration, is a multi-agency blueprint that identifies key actions to realize SAF Grand Challenge goals, including policy support to cut costs and support rapid scale-up of domestic production of SAF REF. The roadmap articulates how federal agencies will coordinate RD&D and

deployment activities to catalyze technology innovation, public–private partnerships, policy frameworks, and investments needed to address barriers to achieving the SAF Grand Challenge goals.

Key priorities to enable a transition to a sustainable aviation industry by 2050 include:

1. **Policy and regulation** to incentivize low-emission aviation innovations through new and breakthrough technologies, and to reduce emissions by providing access to and use of proven technologies from other transportation sectors. Rulemaking can accelerate the implementation of strategies within the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) to the greatest extent possible and will also spur decarbonization efforts. CORSIA requires aircraft operators purchase emissions offsets or use CORSIA eligible fuels (CEF) to reduce international CO_2 emissions above a defined baseline. As an international program, CORSIA enables the development of harmonized standards for emissions offsets and CEF to ensure their robustness and sustainability and creates a marketplace for their use. This harmonization establishes global certainty for all stakeholders involved. The federal government has led the development of all aspects of CORSIA and continues to work to ensure CORSIA's environmental integrity.

2. **Research and innovation** to advance technological, operational, and sustainable aviation fuels solutions to reduce emissions. Research on aircraft and engine technologies can deliver improvements in efficiency and reductions in emissions. The SFNP will conduct ground and flight tests to demonstrate technologies with step-change improvements in environmental performance. The legacy infrastructure in use across the National Airspace System must continue to be modernized to support improved and emerging technologies. Enhanced data quality and information distribution can enable operators to fly more fuel-efficient trajectories in U.S.-controlled airspace, especially during the cruise phases of flights. Continued federal support for RD&D and deployment focused on feedstock systems, conversion, testing, analysis, and coordination—as well as ongoing industry collaboration through direct partnerships and the Commercial Aviation Alternative Fuels Initiative (CAAFI)—will be essential to a successful transition to SAF. In addition, decision support tools must be developed for industry to cost-effectively address the overall climate impacts of aviation via contrail mitigation.

3. **Expand stakeholder engagement and partnerships** around the world to address the challenges and opportunities inherent in the international nature of aviation. Pursuing ambitious international standards that incentivize the most effective technologies is essential to safely limit the growth of, and ensure reductions in, aircraft emissions. The federal government can continue to provide technical leadership to the ICAO Committee on Aviation Environmental Protection (CAEP) and its working groups. Government leadership must also negotiate internationally to maintain the environmental integrity of CORSIA and its mission, strengthen ICAO's aircraft CO_2 emissions standard, and support the implementation of the medium- and long-term goals adopted by ICAO in 2022 to ensure they realize their potential to drive aviation climate action globally. The U.S. must also work toward mutually beneficial climate protection provisions in aviation bilateral and multi-lateral agreements.

G. PIPELINES

Although freight is typically thought of as commercial goods hauled by trucks, ships, or rail, petroleum fuels, natural gas, and other commodities primarily transported by pipelines are also considered freight. In fact, pipelines carried 18% of all freight by tonnage in the U.S. in 2015, second only to trucks [REF]. Approximately 3.3 million miles of pipelines transport natural gas and petroleum (crude oil and refined products) throughout the country. Natural gas and petroleum represent 32% and 37% of total U.S. energy usage today, respectively. Liquid fuels such as gasoline are pushed through pipelines by pump stations, which are typically powered by electricity, diesel, or natural gas-powered engines. Gaseous fuels such as natural gas are pushed through pipelines by compressor stations, which are usually powered by natural gas or electricity.

Generally, these pipeline systems offer an efficient method of transportation; however, the fossil fuels they move are a major source of U.S. GHG emissions. The energy used to move products through pipelines is responsible for approximately 4 MMT of CO_2 emissions per year (plus emissions associated with generation of electricity). These emissions come from several sources, including the combustion of fuels to drive pumps and compressors, intentional pipeline blowdowns and venting, and equipment malfunctions or human error resulting in unintentional releases. Moreover, pipeline leaks and failures can release methane, a potent GHG, into the environment. Methane leaks resulted in an estimated 57 MMT of CO_2-equivalent emissions in 2019 (methane emissions during hydrocarbon production was responsible for an additional 134 MMT of CO_2-equivalent emissions in 2019)—a much higher amount of emissions than generated by pump and compressor stations.

Reducing methane emissions while energy systems transition to cleaner fuels will require more accurate leak detection and quantification, as well as adjustments to pipeline operation and maintenance procedures. Similarly, emissions from pipeline energy use can be reduced by using cleaner energy to operate pumps, compressor stations, and other support equipment, and by reducing the use and transportation of fossil fuels.

The federal government and pipeline owners and operators have a variety of tools at their disposal to mitigate methane leaks, reduce emissions from pipeline operations, and positively impact environmental justice communities. Priority levers include:

1. **Policy and regulation** that continue to increase the stringency of methane emissions limits, tackle emissions associated with pipeline operations (e.g., pumping and compressor stations), and promote the viable use of electricity or other clean energy sources. The bipartisan Protecting our Infrastructure of Pipelines and Enhancing Safety Act of 2020 (PIPES Act) directed DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) to minimize methane emissions from pipeline facilities. PHMSA has issued a number of regulations focused on pipeline safety and methane emission reduction, as outlined in the *U.S. Methane Emissions Reduction Action Plan* (including the Gas Gathering Pipeline Safety Rule, Valve Rule, and Gas Transmission Safety Rule). In addition, PHMSA has initiated rulemaking on

several other rules (including Leak Detection Rule, Gas Distribution Rule, and Liquified Natural Gas (LNG) Facilities Rule, as well as a new rule for carbon dioxide pipelines) to enhance pipeline safety and methane and carbon emissions reductions from pipeline facilities.

2. **Infrastructure investments and improved design and planning** for pipelines as made possible through provisions in the BIL. The new Natural Gas Distribution Infrastructure Safety and Modernization grant program will support the repair, rehabilitation, or replacement of leaking or failure-prone natural gas distribution pipeline facilities in community-owned systems. Those efforts will decrease leakage, thus reducing pipeline-related methane emissions [REF].

Additionally, investments focused on shifting toward electrifying pumps and compressor stations can reduce emissions associated with operations.

3. **Research and innovation** to continue to develop tools and reporting systems for accurate disclosure of methane emissions, including direct measurement and remote sensing technologies; performance-based risk reduction for design, construction, operations, maintenance, and fire protection of LNG facilities; improved safety systems for underground natural gas storage facilities; and new technologies to mitigate risk posed by excavation damage to pipelines. Additional research efforts should focus on safety and environmental mitigation improvements associated with an increase in the transport of sustainable fuels, hydrogen, and CO_2 for CCS via pipelines. It will be critical to focus on the safety, reliability, resiliency, and emissions associated with pipelines used for sustainable fuel and CO_2 as we transition to a decarbonized economy.

FUTURE OF PIPELINES

As we transition to a net-zero economy, the role of pipelines will also transform. While pipelines primarily transport fossil fuels today, in a future sustainable energy system pipelines could also transport CO_2 to injection wells for carbon capture and sequestration and to other end users. They could also be used to transport hydrogen and other sustainable liquid fuels like SAF. There are several risks and barriers associated with the transportation of alternative fuels by pipeline and potential integrity threats posed by different fuels must be fully examined and understood.

6. CONCLUSION – A CALL TO ACTION

"The benefits of a net-zero future will not only be felt by future generations. Mobilizing to achieve net-zero will also deliver strong net benefits for all Americans starting today. Driving down greenhouse gases will create high-quality jobs, improve public health in every community, and spur investments that modernize the American economy while reducing costs and risks from climate change. Reducing air pollution through clean energy will alone help avoid 300,000 premature deaths in the United States—alleviating these and other severe impacts that also fall disproportionately on communities of color and low-income communities. Investments in emerging clean industries will enhance our competitiveness and propel sustained economic growth. Modernizing the American economy to achieve net-zero can fundamentally improve the way we live, creating more connected, more accessible, and healthier communities.

That does not mean it will happen quickly or without hard work. There will be many challenges on our path to net-zero that will require us to marshal all our ingenuity and dedication. But it can, and must, be done. And even as we invest at home, the new technologies and investments outlined in this strategy will also help scale up low-cost, carbon-free solutions for the world. We can create a healthy, vibrant, and abundant world for our children. This plan is our promise to them—and it is one we must keep."

The Long-Term Strategy of the United States, November 2021

The Long-Term Strategy of the United States highlights the urgency of tackling the climate crisis and decarbonizing the U.S. economy. Transportation is the largest source of GHGs emissions and the second largest household expense. **Decarbonizing the transportation sector is integral to achieving a net-zero-emissions economy that benefits all communities.** Moving toward zero transportation GHG emissions is not only critical to tackling the climate crisis, but the accompanying transformation of passenger and freight mobility system toward sustainable solutions and technologies will save lives and improve quality of life. It will reduce pollution, increase U.S. competitiveness, decrease household costs, and increase accessibility for all communities, particularly those that have traditionally been overburdened and underserved.

To confront this challenge, in September 15 of 2022, DOE, DOT, EPA, and HUD signed a historic MOU to collaborate on rapidly decarbonizing transportation. The agreement recognized the unique expertise, resources, and responsibilities of each agency, setting the foundation for solutions that are more innovative and far-reaching than any of the agencies could achieve independently. The first step in this collaboration was to create a national vision for a decarbonized transportation system that will guide the four agencies and our partners as we move toward a better transportation future. This Blueprint offers that shared

The Blueprint's Five Principles

Initiate bold action

Embrace creative solutions across the entire transportation system

Ensure safety, equity, and access

Increase collaboration

Establish U.S. leadership

vision, giving direction to our future policymaking and research, development, demonstration, and deployment in the public and private sectors.

This Blueprint is based on five principles: initiate bold action; embrace creative solutions across the entire transportation system; ensure safety, equity, and access; increase collaboration; and establish U.S. leadership. It presents a three-pronged approach to realizing a clean, safe, secure, accessible, affordable, equitable, and decarbonized transportation system for all:

1. **INCREASING CONVENIENCE** by supporting community design and land-use planning that ensure services are located near where people live to reduce commute times, improve walkability and bikeability, and enhance quality of life and access to jobs and services;
2. **IMPROVING EFFICIENCY** by expanding affordable, accessible, and efficient options like public transportation and rail, and improving the efficiency of our systems and vehicles; and
3. **TRANSITIONING TO CLEAN VEHICLES AND FUELS** across all travel modes and vehicle types.

These strategies present unique opportunities and will be most effective if decision-makers, acting quickly and in concert, continually increase the ambitions of their actions, collaboration, and investments. There is no one technology or approach that will solve our transportation challenges unilaterally; we need to develop, deploy, and integrate a wide array of technologies and solutions to ensure we achieve our 2030 and 2050 goals.

Achieving a sustainable transportation future will require implementing bold changes and different sets of solutions to address unique challenges in different locations and across all travel modes and applications. Accordingly, this Blueprint identifies six specific levers that the agencies can use to support and implement these strategies: Policy and Regulation; Infrastructure, Industrial Investments, and Financing; Research and Innovation; Data and Tools; Workforce Education and Training; and Stakeholder Engagement and Public-Private Partnerships.

Transforming our transportation systems over the next three decades will be a complex endeavor, but **by taking a comprehensive and coordinated approach it is a challenge that we can, and must, solve.** In addition to leadership at the federal level, reaching our ambitious climate goals will require collaboration with regional, state, local and Tribal governments; industry; community-based organizations; and non-profit and philanthropic organizations. Together, we must act decisively to provide better mobility options, reduce inequities, and offer affordable and clean mobility solutions to ensure the health of the planet for future generations. **The time to act is now.**

NEXT STEPS: MOVING TOWARDS THE SOLUTION

Addressing the climate crisis requires rapid, dedicated, and coordinated actions. This Blueprint is a critical step by DOE, DOT, EPA, and HUD to provide leadership across the federal government toward achieving the goal of a decarbonized transportation system. However, the Blueprint alone is not enough. The new challenge to each of the agencies, and all of our partners, is to take actions and implement the changes necessary to achieve U.S. climate goals. The strategies, guiding principles, and tools and levers identified in this document will steer each agency's efforts, as will our overarching and historic commitment to coordinate actions in bold and innovative ways. The agencies will implement the strategies presented in this Blueprint to shape policy and regulatory decisions, funding and budget priorities, research goals, stakeholder interactions, and many other agency activities that will impact the future of transportation, energy, and our economy. The agencies will also jointly develop and release more detailed action plans that focus on the specific actions and levers relevant to each agency in order to accelerate decarbonization. Below is a summary of actions described in this Blueprint:

Before 2030 – Turning the Tide on Transportation GHGs: Research and Investments to Support Deployment

Maximize the impact of the historic BIL/IRA investments and catalyze collaboration and private investments

Envision, develop, and demonstrate scalable urban, suburban, and rural planning and land-use solutions, performance measurement, and supporting policies to increase convenience and reduce travel needs, considering environmental justice and equity.

- Convene an interagency group to develop tools and collect data to better understand behavioral changes and opportunities to manage travel demand

Support state and local decision makers with best practices, data, tools, and technical assistance to develop, implement, and evaluate a wide range of demand-management strategies on system-level design solutions to increase convenience and reduce emissions

Work with partners to identify solutions to ensure current and future transportation systems are more equitable and benefit underserved and disadvantaged communities

Support land-use, street design, and development policies that make walking, biking, and rolling easier, safer, and more convenient

Reduce the national transportation cost burden by at least 5% by 2030

Improve reliability, frequency, accessibility, and affordability and expand service for rail and public transportation, and invest in active transportation infrastructure to provide options to safely use more energy-efficient forms of transportation Continue to strengthen standards to improve vehicle efficiency

Provide incentives to support greater use of efficient travel modes and vehicles

Set clear, ambitious but achievable targets across all travel modes (e.g., sales shares of zero-emission vehicles, volumes of sustainable fuels, emissions reduction targets)

Work with international partners to define targets and implementation plans to encourage international shipping and aviation to rapidly decarbonize those modes

Demonstrate a suite of aircraft technologies by 2030 that achieve a 30% improvement in fuel efficiency compared to today's best-in-class aircraft

Reduce aviation emissions by 20% when compared to a business-as-usual scenario

Invest in research and innovation to further develop and demonstrate clean technologies necessary for a decarbonized transportation sector

- Keep lowering battery costs to close purchase price gap with conventional vehicles
- Develop and demonstrate pathways to produce clean hydrogen and sustainable fuels affordably
- Increase production of sustainable aviation fuels to 3 billion gallons a year by 2030

Continue to provide funding and policy incentives to accelerate the uptake of low- or zero-emission vehicles and invest in supporting infrastructure (e.g., vehicle rebates and EV charging infrastructure), especially in low-income and overburdened communities

- Build an equitable network of 500,000 EV chargers by 2030 to support EV adoption
- Achieve 50% of electric light-duty vehicle sales by 2030
- Ensure that 100% of light-duty federal fleet vehicle acquisitions are zero-emission vehicles by 2027 and 100% of medium and heavy-duty vehicles are zero-emissions by 2035
- Achieve 30% zero-emission medium- and heavy-duty vehicle sales by 2030
- Develop a policy toolkit or guidelines to help regional, state, local, and Tribal governments encourage people and freight companies to use EVs.

Develop a robust workforce and supply chain solutions to ensure the U.S. can manufacture enough clean vehicles and fuels to meet rapidly growing demand and that the resulting jobs and economic opportunities are distributed equitably

2030-2040 – Accelerating Change: Scaling Up Deployment of Clean Solutions

Adapt strategies and implementation plans in response to global events, consumer response, and technology progress

Implement urban, suburban, and rural planning and land-use solutions and supporting policies at scale to increase convenience and reduce travel needs

Continue to leverage advanced computing and data analytics to optimize logistics planning and provide options to reduce vehicle miles traveled Administer forward-looking policy and management at the overall transportation-system-level to maximize the positive impact of transformative technologies, like automation, in terms of quality of life and emissions.

Continue to invest in and encourage a greater use of efficient travel modes for passenger and freight to optimize travel and freight logistics and improve fuel economy

- Leverage connectivity, micromobility, and other technologies, as well as innovative business models, to enable multimodal and shared travel and improve options to complement efficient modes like rail and transit for first- and last-mile solutions

Continue to strengthen standards to further improve vehicle efficiency

Transition all new vehicles sales to zero-emission technologies and scale-up sustainable fuels

- Transition light-duty vehicle sales to zero-emission EVs by the mid-2030s
- Achieve 100% zero-emission medium- and heavy-duty vehicle sales by 2040. Ensure that 100% of all federal fleet vehicle acquisitions are zero-emissions vehicles by 2035
- Continue to scale-up use of sustainable fuels for aviation and maritime

Ensure infrastructure needed to support clean technologies is in place

- Build out hydrogen refueling networks for commercial trucks and other applications
- Continue to scale-up equitable EV charging infrastructure and support grid decarbonization
- Scale up clean fuel production, including hydrogen and sustainable aviation fuels
- Effectively integrate future transportation system with the broader energy sector—especially the power grid—to maximize the benefit of renewable energy and support resiliency

Continue to build resilient supply chains and a robust workforce development strategy to enable a full transition from petroleum to clean solutions

2040-2050 – Completing the Transition: A Sustainable and Equitable Future

Ensure that no one is left behind and do our part to achieve a net-zero-emissions economy

Continue to realize and use urban, suburban, and rural land-use and planning solutions and policies to increase convenience and to provide better and more equitable transportation options that reduce emissions across the transportation system

Fully leverage the potential for efficient travel modes like rail, transit, shared multimodal mobility, and maximize vehicle efficiency

Support fleet turnover to fully replace legacy vehicles with clean zero-emission solutions

- Supply 100% of fuel demand with clean fuels (e.g., 35 billion gallons of SAF by 2050)

In addition to guiding federal agencies, this Blueprint is intended to send a strong signal to our partners and other stakeholders, who can look to this document as a guidepost and framework to support and complement their own planning and investments and to further coordinate actions. These stakeholders include local, state, regional, county, and Tribal governments; industry; investors; and community and advocacy groups. Recognizing the urgency of the moment and the critical role that decarbonizing the transportation sector must play in tackling the climate crisis, stakeholders across the transportation sector should continue to pursue ambitious targets, seize the opportunity to implement change, and lead the decarbonization of our transportation system from every angle, starting from and building off of the strategies presented here.

This Blueprint articulates the strategies and the targets needed to enable a transition to a sustainable transportation system by 2050, building upon and expanding existing goals and ongoing efforts for every mode of transportation. It is an exciting first step toward realizing the vision of an improved and sustainable transportation future. Decarbonizing our transportation system will not come without challenges. However, with coordinated and bold actions across

This BLUEPRINT articulates the strategies and the targets needed to enable a transition to a sustainable transportation system by 2050.

the federal government and with our partners, they are challenges that we can meet. We will continue to increase ambition, **setting bold targets for improving our transportation systems and transitioning to zero-emissions vehicles and fuels on a timeline consistent with achieving economy-wide 2030 and 2050 emissions reduction goals.** As we decarbonize our transportation system, we can create a more affordable and equitable transportation system that will provide multiple benefits to all Americans for generations to come—the work is worth the effort. As technology and policy continue to evolve in an ever-changing world, it will be important to continually evaluate and improve our actions, and to continue strengthening the collaborations between DOE, DOT, EPA, and HUD, and with all of our partners. It is up to all of us to make that vision a reality and move forward with creative and innovative solutions toward a better future for all.

ACKNOWLEDGEMENTS

Study Leadership

The following individuals were responsible for the overall leadership and visions behind this Transportation Decarbonization Blueprint:

- DOE: Michael Berube
- DOT: Andrew Wishnia
- EPA: Karl Simon
- HUD: Alexis Pelosi

Study Coordination and Primary Authors

The following individuals led the development and writing of this Blueprint and coordinated the technical work including drafting, reviewing, and editing processes:

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- Communication and graphic support: Clay Carrington, Krista Wilkins, Carson Poe, Brian Orms
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Secondary Contributors

The following contributors provided a range of technical and analytic input in specific topic areas of the Transportation Decarbonization Blueprint. Individuals who provided valuable peer-review comments are also noted below.

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- DOT: Hal Connolly, Victor Waldron, Jim Hileman, Kevin Welsh, Kevin Partowazam, Vinay Nagabhushana, Dan Yuska, Michael Carter, Tricia Harr, Sentho White, Steve Nanney, Max Kieba, Kandilarya Barakat, Vincent Holohan, John Gale, John Davies, Alan Mitchell, Ryan Steinbach, Shawn Johnson
- EPA: Britney McCoy, Lisa Snapp, Chris Ramig, Jessica Daniels, Sarah Froman, Chien Sze, Sarah Roberts, Cullen Leggett, Kevin Bolon, Robin Moran, Brian Nelson, Richard Baldauf, Megan Susman, John V. Thomas, Reyes Barboza
- HUD: Regina Gray, Josh Geyer, Robin Keegan, Pamela Blumenthal, Solomon Greene, Warren Friedman, Bruce Haber, Susan Horowitz, Joseph Downes

TRANSPORTATION DECARB BLUEPRINT ACRONYM LIST

AEO ..... Annual Energy Outlook 2022

BETO..... Bioenergy Technologies Office (U.S. Department of Energy)

BIL ..... Bipartisan Infrastructure Law

CAAFI..... Commercial Aviation Alternative Fuels Initiative

CAEP..... Committee on Aviation Environmental Protection

CAFE..... Corporate Average Fuel Economy

Cal-ITP..... California Integrated Travel Program

CCS..... carbon capture and storage

CEF ..... CORSIA eligible fuels

CO_2 ..... carbon dioxide

CORSIA..... Carbon Offsetting and Reduction Scheme for International Aviation

DERA ..... Diesel Emissions Reduction Act

DOE ..... U.S. Department of Energy

DOT ..... U.S. Department of Transportation

EPA ..... U.S. Environmental Protection Agency

eTOD..... equitable transit-oriented development

EOP..... Executive Office of the president

EV ..... electric vehicle

FCAB..... Federal Consortium for Advanced Batteries

FHWA..... Federal Highway Administration

FTA ..... Federal Transit Administration

GDP ..... gross domestic product

GHG ..... greenhouse gas emissions

HOME ..... Home investments Partnership Program

HUD..... U.S. Department of Housing and Urban Development

ICAO ..... International Civil Aviation Organization (United Nations)

IRA..... Inflation Reduction Act

kWh ..... kilowatt-hour

LAI ..... Location Affordability Index

LDV..... light-duty vehicle

LNG..... liquified natural gas

LTS..... Long-Term Strategy of the United States

MDV..... medium-duty vehicle

MHDV ..... medium- and heavy-duty vehicles

MMT ..... million metric tons

MOU ..... memorandum of understanding

NHTSA..... National Highway Traffic Safety Administration

NOx ..... nitrogen oxides

PHMSA ..... Pipeline and Hazardous Materials Safety Administration

PIPES Act..... Protecting our Infrastructure of Pipelines and Enhancing Safety Act

PIDP..... Port Infrastructure Development Program

RD&D..... research, development, and demonstration

ROW ..... right-of-way

SAF ..... sustainable aviation fuel

SFNP..... Sustainable National Flight Partnership

SO_2 ..... sulphur dioxide

TDM..... transportation demand management

tWh ..... terawatt hours

USD ..... United States dollars

USDA ..... United States Department of Agriculture

V2G..... vehicle-to-grid power

V2X..... vehicle-to-other power

VMT ..... vehicle miles traveled

VOC ..... volatile organic compounds

ZESM ..... Zero Emission Shipping Mission

ZEV ..... Zero Emission Vehicle Task Force

DOE/EE-2674 | January 2023

ATTACHMENT 8

March 8, 2024

Sam Worley
Mile High Marina
P.O. Box 3090
McCall, ID 83638

RE: Historical impacts of marinas upon the Water Quality of Payette Lake

Sam,

You recently contacted me regarding concerns that the McCall City Council has regarding the potential adverse environmental impact that the proposed 90-slip expansion to the Mile High Marina (*henceforth referred to as the marina*) may have upon the overall water quality of Payette Lake.

The following findings and conclusions presented in this letter are based upon 1) annual Drinking Water Quality Reports (2011 through 2022) provided by the City of McCall Water Treatment Plant (WTP) and 2) conversations with City personnel regarding the creation of the Reports.

After reviewing the above-referenced documents, the following information was obtained:

Historical Drinking Water Quality for the City of McCall, Idaho													
COC	**MCL**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
B	5 ppb	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND
T	1 ppm	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND
E	700 ppm	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND
X	10 ppm	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND
Turbidity	1 NTU	0.45	0.16	0.24	0.24	0.24	NA	0.24	NA	NA Ω	NA Ω	0.038	0.078

COC – Contaminant of Concern
MCL – Maximum Contaminant Level or the maximum concentration allowed in drinking water
B – Benzene, a non-methane volatile organic compound. MCL is 5 parts per billion, ppb.
T – Toluene, a non-methane volatile organic compound. MCL is 1 part per million, ppm.
E – Ethylbenzene, a non-methane volatile organic compound. MCL is 700 ppb.
X – Total (ortho, meta and para) Xylenes; all non-methane volatile organic compounds. MCL is 10 ppm.
Turbidity – MCL is 1 NTU (Nephelometric Turbidity Unit).
ND – Not Detected, where the lab analysis reveals no detectable levels of the COC.
NA – Not Analyzed or Not Available.
NOTES regarding BTEX water-sampling dates: 2019-2022 (no info); 2017-2018 (DEC); 2014-2015 (FEB, MAR for B and T, AUG for E and X); 2013 (AUG); 2011-2012 (MAR).
NOTE regarding Turbidity water-sampling dates: Continuously, at the McCall WTP.
NOTE regarding Turbidity values for years 2011-2022: Average detection values for the sample year.
Ω – 99 percent of yearly sample analyses were below 0.3 NTU.

FINDINGS

After reviewing 11 annual Drinking Water Quality Reports (WQ Reports) and through conversations with City personnel, the following noteworthy facts came to bear:

- A No Wake Zone exists over the Legacy Park intake (City's WTP intake), which is submerged *at least* 70 feet and located *at least* 500 feet from the Mile High Marina. A 2022 wake surfing study determined that the greatest water depth impacted by propeller down-wash is *no greater than* 6.5 feet, when the propeller is set 3 feet below the lake surface (1). A 2022 study regarding the hydrodynamic impacts of recreational watercraft found a *minimal potential* for impact upon silty lake bottoms at water depths exceeding 15 feet (2).
- The BTEX Contaminants of Concern (COCs) are organic liquids known as LNAPLs (Light Non-aqueous Phase Liquids) which have specific gravities less than that (ie, 1.0) of lake water and would therefore predominantly (if not entirely) float upon the lake surface.
- Not all WQ samples and analyses were made at the optimal time (ie, AUG) to best check potential adverse impacts of watercraft pollution upon the Lake. The above table reveals that most sampling events occurred during the off-season.
- All WQ Reports refer to the *post-treatment* analysis of lake water samples. City personnel stated that analyses will henceforth *also* be made *before* treatment at the WTP.
- City personnel revealed that the WTP has been and is currently *not equipped* to treat the BTEX COCs shown in the above table.
- City personnel revealed that they strongly suspect that a significant source of lake water turbidity *may be attributable* to glacial silt, which is most commonly referred to as *rock flour*, which creates the vivid turquoise hues seen in glacier-fed lakes like Lake Louise in Canada. Rock flour consists of *extremely* light and tiny particles of rock-derived silt that stays suspended within the water column *considerably longer* than typical lake-bottom sediments.

  City personnel shared that the equipment that measures Turbidity NTU is being replaced with superior (ie, more sensitive) devices that will provide more accurate results.

CONCLUSIONS

The following conclusions are derived from the findings listed above:

- ✓ Given the relatively significant depth and distance from the City's WTP intake, the findings of two separate and independent studies showing no disturbances within the upper 15 feet of a lake's water column, the existence of an established No Wake Zone within the lake surface over the intake and the fact that BTEX COCs preferentially *float*, it is highly unlikely that BTEX pollution will ever reach the City's WTP intake.
- ✓ Because most BTEX water samples were taken during off-season times, the possibility exists that the WQ Reports are biased in favor of BTEX polluters, since considerably less watercraft activity occurs during the off-season. Future water sample collection / analysis during the peak season should provide a more accurate picture regarding the potential BTEX pollution commonly associated with motorized watercraft.

  One encouraging fact is seen in the AUG (ie, peak season) water analyses for Ethylbenzene (E) and Total Xylenes (X), where Not Detected (ND) levels were nonetheless found.
- ✓ Given that the WTP has not historically treated or currently treats BTEX, the analyses for these *untreated* COCs may be considered as *pre-treatment* analyses. Accordingly, the Not Detected (ND) findings should be considered as representative of the water quality at the City's WTP *intake* regarding BTEX.

- ✓ All WQ Reports revealed Turbidities *well below* the 1 NTU Maximum Contaminant Level (MCL), with *considerably lower* NTU values detected during 2021 and 2022. Given the relatively significant depth and distance of the City's WTP intake to the Mile High Marina; findings from two separate and independent studies showing no disturbances within the upper 6.5 to 15 feet of the lake's water column and the existence of an established No Wake Zone over the intake, it is *extremely unlikely* that full-speed (let alone idling) watercraft will contribute anything to the naturally occurring turbidity at the lake bottom or by the intake. Given that some (or most) of the lake water turbidity *may* be attributable to natural "rock flour" conditions, the possibility exists that the City's *future* Turbidity MCL may become *less stringent* regarding this COC.

Given the Findings and Conclusions addressed in this letter, it is *highly unlikely* that the proposed 90-slip expansion for the Mile High Marina will significantly pollute Payette Lake bottom water with BTEX COCs and it is even *more unlikely* that (idling or even full-speed) watercraft will contribute *any* additional turbidity to the lake bottom water surrounding the City's WTP intake.

Please call me if you have any questions whatsoever.

Sincerely,

Brett D. Smith PE, LG
Professional Engineer / Licensed Geologist
(LG registration in WA)
(PE registrations in ID, NV, OR and WA)

REFERENCES CITED

1. Endicott, Fay M., et al: *Numerical Study of the Impact of Wake Surfing on Inland Bodies of Water,* Journal of Water Resource and Protection, 14, 238-272, 2022.
2. Valley County and the City of McCall, Idaho: *A Sustainable and Adaptable Plan Preserving What We Love*, Valley County Waterways Management Plan, 2022.

ATTACHMENT 9

SPILL RESPONSE PLAN – MILE HIGH MARINA

POLICY TITLE: SPILL RESPONSE PLAN – MILE HIGH MARINA
EFFECTIVE DATE: 1/1/2023
REV CYCLE: 1
PROCESS OWNER: ELI ELISONDO
EXECUTIVE APPROVER: TIM WOLTHIUS

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POLICY

Christensen Inc. is committed toward the goal of necessary preparation for and response to spills, leaks, and all unintentional chemical releases, Christensen Inc. has developed a plan that will be updated and reviewed by the Christensen Inc. management team as necessary to ensure accuracy. Christensen Inc. has addressed the necessary preparation for and response to spills, leaks, and all unintentional chemical releases.

RESPONSIBILITIES

Spills can occur during a chemical's storage, transportation, or transfer, as well as in the actual use. Spill prevention should be a major component of a spill response planning. Adherence to the specific Christensen Inc. procedures and its guidance on the safe and proper use, handling and storage of hazardous chemicals will help to minimize the potential for chemical spills.

Supervisors shall:

- Ensure employees understand the policy and procedure requirements of this document and any relevant chemical-specific spill response procedures.
- Maintain current safety data sheets (SDS) for all chemicals.
- Review SDS and handling procedures for all chemicals with employees and maintain training records.
- Ensure that appropriate and adequate spill response and personal protective equipment (PPE) supplies are maintained and available for use at all times.

Employees shall:

- Understand the policy and procedure requirements of this document and any relevant chemical-specific spill response procedures.
- Promptly and appropriately respond to chemical spills.
- Do not use chemicals if not adequately trained.
- Wear personal protective equipment as directed by this or other relevant spill response procedures.

Spill Response Personnel shall:

- Understand the policy and procedure requirements of this document and any relevant chemical-specific spill response procedures covering specific techniques, equipment, and strategies for responding to petroleum spills effectively and safely. This training may be provided by an approved trainer or agencies that specialize in oil spill response.

- Wear personal protective equipment as directed by this or other relevant spill response procedures annual refresher training on spill response procedures, including clean-up techniques for different environments.
- Complete HAZWOPER Training:
    - All members of the spill response team should complete the appropriate level of HAZWOPER training based on their role:
        - HAZWOPER 24-hour training: This is required for personnel who may encounter hazardous substances but are unlikely to be directly involved in cleanup operations. Examples include supervisors, on-scene coordinators, and personnel who assess the site.
        - HAZWOPER 40-hour training: This comprehensive training is required for personnel engaged in hazardous substance cleanup and emergency response operations.

Mile High Marina shall:

- Understand relevant chemical-specific spill response procedures.
- Understand the policy requirements of spill reporting to Christensen as well as regulatory agencies. and any relevant chemical-specific spill response procedures.
- Promptly and appropriately cooperate with remediation efforts.
- Coordinate with Christensen personnel to report all spills that meet the criteria necessitating the event to be reported to the applicable agency.

IMPLEMENTATION

Chemical spills most often involve small quantities of materials and, if precautions are taken, present minimal hazards. However, some spills will require the use of outside assistance, because of the spill's size or potential hazards posed to individuals or the environment. This procedure provides guidance on determining the hazard severity of a spill and the procedures that shall be implemented based on the determined hazard severity.

PREPARATION

To prepare for spills, each affected Christensen Inc. employee shall:

- Be familiar with the hazards of the chemicals that are under their control.
- Be familiar with these general chemical spill response procedures and, as necessary, develop specific procedures for any chemicals that require specific measures.
- Ensure the availability of equipment and completion of training necessary to follow those procedures.

CLASSIFICATION AND REPORTABLE CRITERIA FOR SPILLS

Christensen Inc. Follows IDAPA 58.01.02.851.04a for spill classification:

1. Minor spills (<25 gallons) – Spill or overfill that results in a release that is less than 25 gallons and does not cause a sheen on nearby surface water shall be reported to the Department of Environmental Quality if cleanup cannot be accomplished within 24 hours.

2. Major Spills (>25 gallons) - Spill or overfill that results in a release that exceeds 25 gallons or that causes a sheen on nearby surface water shall be reported to the Department of Environmental Quality within 24 hours.

SPILL REPORTING REQUIREMENTS AND PROCEDURES

All chemical spills, regardless of size, should be reported as soon as possible to the Facility Responsible Person. The Facility Responsible Person will alert HSSE whether the spill has the potential to affect the environment outside of the facility and must be reported to emergency management services. Christensen Inc. is required to report certain releases/discharges of hazardous substances to the Department of Environmental Quality (DEQ – ID) and the National Response Center (NRC). In order to ensure fulfillment of and compliance with the regulatory obligations, the HSSE Department shall assist in the execution of all reporting notifications to the previously mentioned regulatory agencies. Strategic planning shall occur following major spills to prevent reoccurrence.

SPILL REMEDIATION

The objective of a Spill Remediation Plan (SRP) is to establish clear guidelines and requirements for the clean-up of petroleum spills in various environments, including water, asphalt, cement, and soil. Christensen aims to ensure swift and effective remediation of petroleum spills, minimizing environmental impacts and promoting public safety. The Incident Commander is responsible for developing a Spill Remediation Plan that must be approved by HSSE and the Executive Team. The plan should cover the following aspects:

- Notifications: Identify applicable Federal, State, and local agencies that must be notified of the spill.
- Containment and Mitigation: Identify strategies that will be made to contain the spill and prevent further spread, using appropriate booms, absorbent materials, or other containment methods.
- Assessment and Classification: The spill shall be promptly assessed and classified based on its severity and identify potential environmental impacts as well as impact to land use, transportation, etc.
- d. Clean Up Process: Depending on the spill classification, the plan must identify specific clean-up procedures tailored for water, asphalt, cement, or soil, following the general guidelines described below that meet the state's specific clean up requirements.

General Cleanup Procedures

Spill cleanup procedures vary depending on the severity of the spill. The responder should assess the situation to determine if the spill is major or minor. Even small spills of highly toxic or flammable

substances can be hazardous. Large spills can cause serious employee injuries, damage to the facility, and have an environmental impact.

When a spill occurs, the responder should do the following:

- Isolate the Area – If there is a fire or medical attention is needed, contact your supervisor or call 911. Warn all people nearby and evacuate the area as necessary.
- Evacuate the Spill – If the spill is flammable or volatile, immediately warn everyone, control all potential ignition sources, and ventilate the area.
- Put on Personal Protective Equipment (PPE) – Use the proper level of PPE based on the evaluation above.
- Confine the Spill – Stop the spill at the source (repair leaks, close valves, use emergency shut-off switch).
- Clean up the Spill – Follow the proper cleanup procedures, depending on the severity of the spill and the situation in which it occurs, to clean up and contain the spilled chemical. Cleanup should begin as soon as possible after a spill has been detected, contained, and evaluated.

Clean-Up Guidelines for Different Environments:

- Water: For spills into water bodies, immediate action should be taken to deploy containment booms and skimmers to prevent oil from spreading. Specialized equipment and techniques may be necessary to recover or disperse the oil, as approved by the regulatory authorities.
- Asphalt: Spills on asphalt surfaces should be contained and promptly cleaned with absorbent materials or specialized cleaning agents that are safe for the environment. If required, the affected area should be excavated and replaced with fresh asphalt.
- Cement: Spills on cement surfaces shall be rapidly contained and cleaned using absorbent material and surface cleaners appropriate for petroleum spills. Pressure washing may be necessary if the spill has penetrated into the surface.
- Soil: Spills on soil require thorough assessment to determine the extent of contamination. If the contamination is limited, soil excavation should be performed, removing the affected area to an approved waste management facility. In cases of major spills or significant contamination, remediation plans should be developed in consultation with environmental experts.

General Spill Procedures

A spill from a truck or at a customer site will be handled differently than a spill in the warehouse. Here are the basic steps to take for all warehouse spills:

- Identify the Spilled Substance – Liquids leaking from marked containers are easy to recognize. Employees should keep away from unknown spills. Never risk your health or life by trying to identify a spilled material. Just reporting the spill may be enough. The first step is to immediately contact a person in the plan who can identify the spill.
- Report the Spill – Immediately report the spill to the appropriate person as per the documented response plan. Whoever is in charge of handling the spill may need to report it to outside agencies. The Code of Federal Regulations (CFR) lists the amounts and types of chemical spills

that must be reported. It needs to be reported if a hazardous material spill enters a storm drain or poses other threats to the environment.

- Protect Workplace Responders – The responders must know the type of PPE that's needed. If the spill hasn't been identified, they should assume the worst and use all PPE available. Keep items such as plugs, patches, wrenches, and other tools with the PPE. It's also good to have containers on hand to catch the spilled liquid. All PPE and supplies should be checked regularly and replaced as needed.
- Contain the Spilled Material – Responders should contain the spill to keep it from spreading. This is usually done by placing dikes around the spill's edges. If there are drains near the spill, they need to be covered with a drain cover. After putting the drain cover on, add a layer of Floor Dry for an extra layer of protection. This will prevent hazardous materials from getting into the drainage system. Cover them even if the spill has already started flowing into the drain to stop the damage.
- Cut Off the Source – If it's still leaking, try to stop it. This might mean turning off spouts or valves, patching a seam, or rolling a leaky drum so that the leak is on the top. This can be done at the same time as containing the spill.
- Clean up the Spill – Cleanup can begin once all other employees are out of the spill zone and the spill is stopped at the source. Work from the outside in toward the center. This helps to make sure the entire area has been cleaned. Anything absorbent can be used – mops, shop towels, mats, socks, etc. Use shop vacs to clean up larger spills.
- Restock Supplies – Make an inventory and restock all supplies and PPE used during the cleanup as soon as possible. Be sure you're prepared for a future spill.

SPILL CLEANUP SUPPLIES AT FACILITIES

Spill kits or bags are vital for maintaining a safe work environment following a spill. These kits can prevent spill-related injuries and property damage. Every Christensen facility should have spill cleanup supplies readily available in case of a spill. Spill supplies at facilities should include but are not limited to:

- Booms – Spill containment booms are devices used to contain spills. Placed around the spill area, they prevent the spill from spreading any further.
- Absorbent pads – Pads are used to recover spills, especially on water. They are hydrophobic, which means that they absorb hydrocarbons while repelling water. This allows them to float on waterways.
- Floor Dry – Floor Dry captures oil so it can be disposed of in a landfill.
- Plug and Dike – This is a clay type of material used to seal small holes in containers and fuel tanks. It is not a permanent seal, but it will last until you can transfer the liquids from the holed container.
- Waste Disposal Bags – After spill cleanup supplies have been used, the waste disposal bags are used to hold all the contaminated products from the spill. This is to ensure the collected spill will not drip or spill further.

- Personal Protective Equipment (PPE) – The responder should have a pair of gloves and safety glasses available for protection against the product. The responder should also be wearing anti-slip shoes when handling a spill.

SPILL CLEANUP SUPPLIES ON TRUCK

Every Christensen truck should have spill cleanup supplies readily available in case of a spill. Spill supplies on trucks should include but are not limited to:

- Floor dry.
- Bucket.
- Non-sparking shovel.
- Broom.
- Absorbent diapers and/or booms.
- Since Christensen trucks vary in size and space, not every truck can fit all the items listed above. If the truck cannot accommodate all the supplies, drivers can reduce the list of supplies to the following:
- Bucket.
- Absorbent pads.
- Floor Dry.

Spill Monitoring and Reporting

After the clean-up process, a post-remediation sample should be pulled to ensure the effectiveness of the clean-up efforts. A report summarizing the spill incident, response, and outcomes should be submitted to relevant authorities for documentation and to aid in future spill prevention and response planning. Non-compliance may result in penalties, fines, or legal actions, as per applicable laws and regulations.

NON-COMPLIANCE

Failure to adhere to this policy may result in disciplinary action, including but not limited to retraining, suspension, or termination, depending on the severity and frequency of the non-compliance.

PROGRAM EVALUATION

Toward the goal of overall program effectiveness, the Spill Response Plan (SRP) will be assessed annually by the HSSE Department. Furthermore, program compliance will be evaluated during HSSE Department facility inspections as well as during routine monthly facility inspections conducted by facility personnel.

Revision #	Effective Date	Change(s)	Reason(s)	Author
1	1/1/23	Contacts	Integration	Eli Elisondo

APPENDIX A

MINOR SPILL GENERAL RESPONSE PROCEDURES

In the event of a MINOR SPILL the following steps should be taken:

1. STOP THE FLOW - Shut off pumps, close valves, and anything to reduce or stop the flow. Establish ventilation, if possible.
2. SECURE THE AREA – Immediately isolate and control access to the spill area. Personnel not directly involved should be kept out of the spill area until clean-up has been completed.
    a. If the spill involves flammable materials, remove ignition sources and unplug nearby electrical equipment.
3. NOTIFY – Immediately notify management on site and your direct supervisor
4. LOCATE THE SPILL KIT. Briefly inventory the contents to ensure that all necessary items are available. Do not start the clean-up if critical items are not available.
5. PPE – Choose appropriate personal protective clothing/equipment (goggles, face shield, impervious gloves, apron, etc.). The minimum chemical protective clothing used should include chemical glasses and glasses. Ensure that all skin surfaces are covered. It is recommended that two sets of gloves be worn: one as the primary barrier, the second as a thin inner liner in the event the primary barrier fails. Chemical splash goggles shall be used if available over standard safety glasses. PPE use, to include training responsibilities, shall be in accordance with Christensen Inc. policy.
6. CONTROL SPILL - Use berms, boom, water hose, etc. to prevent fuel from drains or low lying areas where there is water. Put all single use contaminated items (gloves, clothing, cleaning supplies, etc.) into a plastic disposal bags.
    a. Double layer and seal all disposal bags (twist the open top and wrap with duct tape) and, as possible, contain in the original spill kit container (5-gallon white bucket).
    b. Label the container with the name of the spilled material, date, and the words “hazardous waste.”
7. DECONTAMINATE – When the cleanup is completed, wash hands and other potentially affected skin surfaces with soap and water.

APPENDIX B

MAJOR SPILL GENERAL RESPONSE PROCEDURES

In the event of a MAJOR SPILL the following steps should be taken:

1. STOP THE FLOW - Shut off pumps, close valves, and anything to reduce or stop the flow.
2. SECURE THE AREA – Immediately isolate and control access to the spill area.
3. NOTIFY – Manager or dispatch, who will coordinate with HSSE for Environmental Response Services to the spill.
    a. Provide the following information:
        i. Location of spill
        ii. Estimate of quantity
        iii. Name of chemical spilled
        iv. Conditions of area and affected individuals
    b. Notify Emergency Services if the event involves personal injury or chemical exposure:
        i. Move the victim from the immediate area of fire, explosion, or spill (if this can be done without further injury to the victim or you).
        ii. Locate the nearest emergency eyewash or safety shower.
        iii. Remove any contaminated clothing from the victim and flush all areas of the body contacted by chemicals with copious amounts of water for 15 minutes.
        iv. Seek medical attention.
4. EVACUATE – Communicate the condition to and assist with evacuating, as necessary, all potentially impacted personnel.
5. CONTROL SPILL – If save to do so, use berms, boom, water hose, etc. to prevent fuel from drains or low lying areas where there is water.
6. REPORT – Submit required spill notification to Department of Environmental Quality.

APPENDIX C

MHM – SPILL RESPONSE QUICK GUIDE

1. **STOP THE FLOW** - Shut off pumps, close valves, and anything to reduce or stop the flow.
2. **SECURE THE SCENE** - Prevent further impact or injury
3. **SHUT OFF IGNITION SOURCES** – prevent fire/ explosion
4. **CONTROL SPILL** - Use berms, boom, water hose, etc. to prevent fuel from drains or low-lying areas where there is water.
5. **NOTIFY** – Immediately notify Manager
    a. PERS Emergency Hotline------- (800) 633-8253
    b. Transport Dispatch ---------- (888) 638-5943 Ext. 1
6. **REPORT –** Complete incident report and photograph the scene.
7. **NOTIFICATIONS**
    a. NRC ---------- 1-800-424-8802
    b. ID Response Center ---------- 911
    c. Mile High Marina ---------- (208) 634-8605
    d. MHM Man. Cassidy Tempelton ---- (208) 459-1043
    e. MHM Op Man Sam Worley --------- (208) 315-1907

APPENDIX D

SITE ENVIRONMENTAL ASSESSMENT

General Site Information

- Name: Payette River (North Fork) Subbasin
- Size: 927 square miles
- Bodies of water: Big Creek, Boulder Creek, Boulder/Willow Creek, Cascade Reservoir, Clear Creek, Fall Creek, Gold Fork, Mud Creek, North Fork Payette River, Round Valley Creek, tributaries to Payette Lake, West Mountain tributaries to Cascade Reservoir
- Characteristics: The North Fork Payette River subbasin lies on the northern edge of the Southwest Basin and encompasses the towns of McCall, Donnelly, and Cascade. The subbasin includes Cascade Reservoir and the Payette Lakes.

Potential Worst-Case Release Information

Potential Failure	Spill Direction	Potential Volume Released	Spill Rate
Complete failure of full tank	West / Southwest	10,000 gallons	Instantaneous
Partial failure of a full tank	West / Southwest	Up to 10,000 gallons	Gradual to instantaneous
Tank overfill	West / Southwest	Up to 10,000 gallons	Up to 300 gallons a minute
Plumbing failure	West / Southwest	Up to 10,000 gallons	Up to 250 gallons a minute
Truck leak or failure	West / Southwest	Up to 2,000 gallons	Gradual to instantaneous
Hose leak or failure	West / Southwest	Up to 1,000 gallons	Gradual to instantaneous

Site Drainage, Containment and Diversion Information

- Storm drain with a sand trap nearest to tank openings (Appendix H)
- Storm drain with a sand trap in front of Watercraft Ramp (Appendix J)
- Storm drain with a sand trap to the south of tank openings (Appendix L)

APPENDIX E

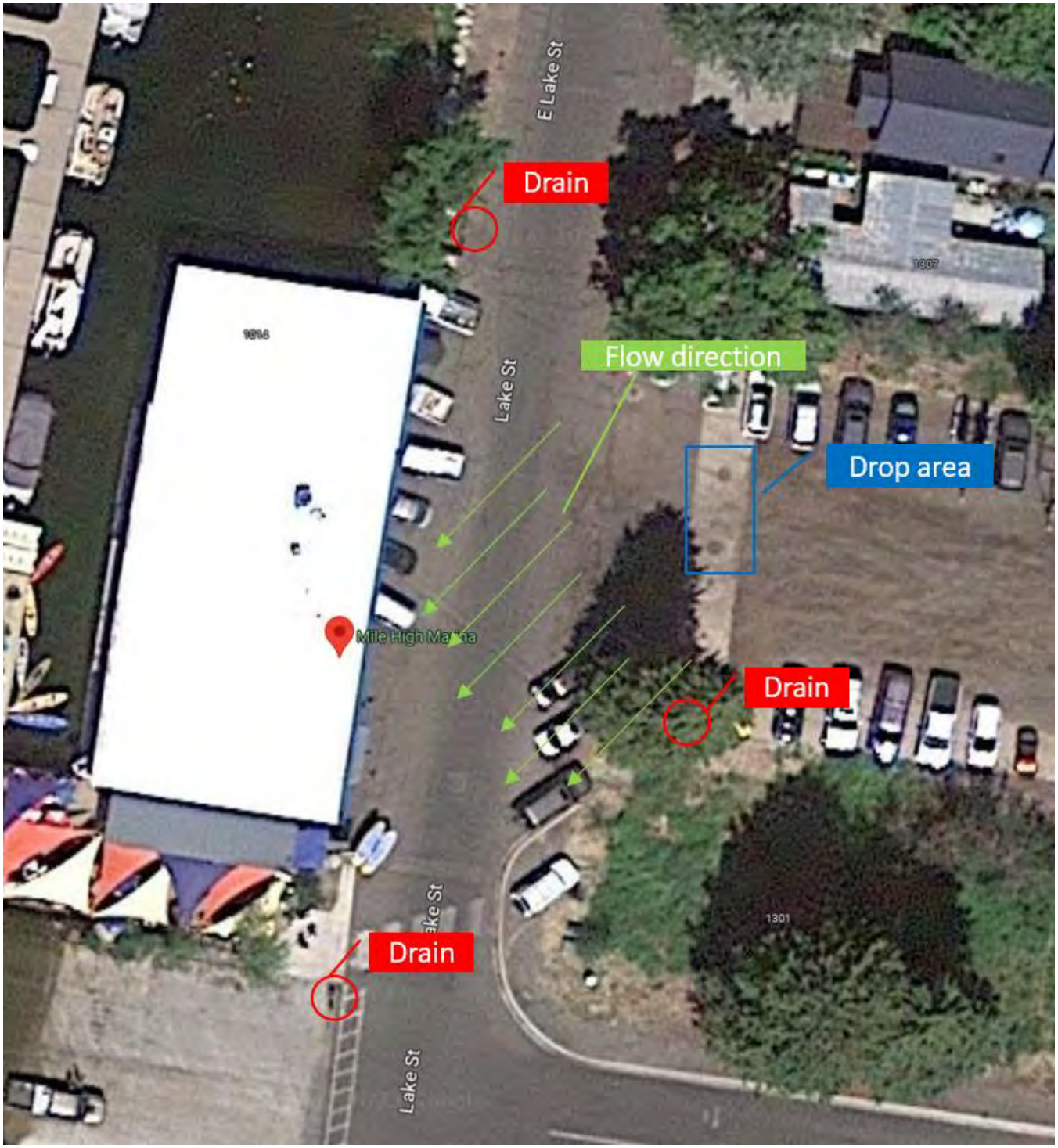
DELIVERY PROCEDURES

1. Review site map: Before leaving the Rack, determine the driving route, and best way to enter the site.
2. Double-check dispatch and terminal paperwork: Double-check that the amount loaded at the Rack is the amount on the dispatch.
3. Enter site and position the vehicle for unloading.
4. Set brakes: Set Tractor and Trailer Brakes
5. Remove keys from vehicle: Remove the keys from ignition and keep the keys with you.
6. Trucks are never to be left running during unloading or fueling unless using a pump.
7. Trucks are at no time ever to be left running and unattended.
8. Hoses are not to be left connected to fills or truck/trailers and left unattended at any time.
9. Turn off all devices: Turn off all lights, radios, cell phones and other electrical equipment. Cell phones may be carried in your jacket or belt but MUST be turned off.
10. Chock wheels: Chock Tractor and Trailer wheels
11. Confirm delivery address: Check the address on the bill of lading against the physical address of the building. Also check at this time for the State underground storage license plate. If you cannot locate you must call dispatch for further instructions.
12. Place cones: Put cones out to create an unloading area "zone". A minimum of four (4) cones should always be utilized in the attempt to make the public aware of the unloading of fuel operation.
13. Walk around vehicle: Walk around vehicle and inspect area to make sure that safe conditions exist.
14. Put on standard PPE (eye protection and gloves).
15. Identify tanks: Each tank fill should have the name of the product and your delivery information should have tank sizes. If you do not have either of these items –STOP your delivery and call dispatch.
16. Measure tanks: Measure each of the tanks and record the readings on your delivery form. Use stick readings. Do not depend upon tank monitor reports. Refer to your tank chart to determine if the product will fit. Company Policy is not to exceed 90% of tank capacity and not to unload part of a compartment.
17. Use water paste, mark water readings on BOL, even if level is zero.
18. Assess weather conditions and prepare spill kit materials for quick access in the event of a spill.
19. Connect vapor hose: Connect the vapor hose to the trailer and then to the fitting and tank fill.
20. Connect product hose: The product hose must be connected to the tank first and then to the trailer. A bucket should be placed under the hose/plumbing connection. In most cases the largest compartment should be unloaded first. Verify product marker on truck before connecting drop hose.
21. Diesel should always be delivered before unloading other products.
22. Double check the connections and walk the hose to verify the correct compartment is connected to the correct UST.
23. Triple check – Before starting the flow of product, check the following: Product tumbler, tank fill and your bill of lading to ensure the correct product is delivered into the correct tank. Check key components (UST product identification, product markers, load sheet, BOL).
24. Open the internal valve: Open the internal valve and then open the quarter turn valve about one-third of the way until you are sure of no leaks and hose/fittings have a good connection. You must stay in attendance (15-20 feet and full view) while hoses are connected.
25. Drop and complete diesel delivery first.
26. Disconnect product hose: Disconnect the product hose from the vehicle and then from the ground.
27. Disconnect vapor hose: Disconnect the vapor from the ground tank connection and then from the vehicle.

28. Switch compartments: To switch compartments. Close internal valve, walk/drain the hose and then close the ¼ turn valve and drain again. Move the product hose from the tank to the next tank and then the product hose from the vehicle to the next compartment.
29. Stick the tanks: Stick the tanks, check measurements with tank charts and verify all products were delivered. Do not depend upon tank monitor reports. Some units may have bottom load sensors as an extra tool to verify the unit is empty.
30. Replace lids: Replace tank caps and lids.
31. Turn in paperwork: Give paperwork to delivery location.
32. Put safety cones away: Make sure caps are snapped down securely. Report any broken caps. Drain fill post of any product left in them. Put away safety cones last.
33. Walk site: Before leaving, walk around truck/trailer making sure tank lids are covered, all hoses, fitting and valves are closed and secured. Double checks to make sure hose tube latches are secured. If not, you will damage or lose a hose. While walking around vehicle, tap on bottom of tanks to double check their empty. Make sure it is clear to leave. If there are maintenance issues at the station (product ID tags missing, lids not painted, etc.) that could cause a future cross drop, report to Dispatch and write on bottom of BOL.

APPENDIX F

SITE MAP


E Lake St
Drain
Flow direction
Lake St
Drop area
Drain
Drain
Lake St

APPENDIX G

FUEL TANK OPENING MAP

APPENDIX H

DELIVERY AREA STORM DRAIN MAP

APPENDIX I

DELIVERY AREA STORM DRAIN PHOTO

APPENDIX J

WATERCRAFT RAMP STORM DRAIN MAP

APPENDIX K

WATERCRAFT RAMP STORM DRAIN PHOTO

APPENDIX L

STORM DRAINS SOUTH OF TANKS

APPENDIX M

SPILL RESPONSE PLAN – MILE HIGH MARINA

40 CFR 302.4 REPORTABLE QUANTITIES DETERMINATION TABLE

Chemical Name	Index Name	CAS/313 Category Codes	Section 302 (EHS) TPQ	Section 304 (EHS) RQ	CERCLA RQ	CAA 112(r) TQ	Conc. %	Reportable volume
GASOLINE								
Benzene [a]	BENZENE	71-43-2	n/a	n/a	10	n/a	5%	30 gallons
Xylene (mixed isomers)	XYLENEMIXEDISOMER	1330-20-7	n/a	n/a	100	n/a	9.50%	157 gallons
Cumene	CUMENE	98-82-8	n/a	n/a	5,000	n/a	4%	18,712 gallons
Cyclohexane	CYCLOHEXANE	110-82-7	n/a	n/a	1,000	n/a	1.50%	9,980 gallons
Ethylbenzene	ETHYLBENZENE	100-41-4	n/a	n/a	1,000	n/a	2.50%	5,988 gallons
n-Hexane	HEXANE-N	110-54-3	n/a	n/a	5,000	n/a	12%	6,237 gallons
Naphthalene	NAPHTHALENE	91-20-3	n/a	n/a	100	n/a	0.05%	2,994 gallons
Toluene	TOLUENE	108-88-3	n/a	n/a	1,000	n/a	12%	1,247 gallons
DIESEL								
Naphthalene	NAPHTHALENE	91-20-3	n/a	n/a	100		3%	481 gallons
Ethylbenzene	ETHYLBENZENE	100-41-4	n/a	n/a	1,000	n/a	1%	14,409 gallons
Hexane	HEXANE	110-54-3	n/a	n/a	5,000	n/a	1%	72,046 gallons

ATTACHMENT 10

MILE HIGH MARINA

SPILL CONTROL AND RESPONSE PLAN

(Updated December 12, , 2023)

Facility Information

Facility Name: Mile High Marina

Facility Address: 1300 East Lake Street McCall, ID 83638

Mailing Address: P.O. Box 3090, McCall, ID 83638

Phone: 208-634-8605

Owner: Samuel Worley

Address: P.O. Box 4010, McCall, ID 83638

Phone: 208-315-1907

Key Contacts

National Response Center: 800-424-8802

City of McCall, Public Works Department:

Director: 208-634-8943

Water: 208-315-3891

Streets: 208-634-9264

ID DEQ: 208-373-0502

ID EPA: 208-378-5746

Fire and Police: 911

Nwestco, Maintenance and Testing: 208-344-6483

Christensen, Inc. dba United Oil, 208-459-6363

Olympus Technical Services, Clean Up Contractor: 208-562-5500

Cassidy Templeton, General Manager: 208-469-1043

Samuel Worley, Owner: 208-315-1907

Storage Tanks

Tank 1: Underground storage tank, double-walled construction 10,000-gallon capacity

Tank 2: Underground storage tank, double-walled construction 10,000-gallon capacity

See Figure 1 for the location of buried underground fuel storage tanks.

Both tanks are kept locked at all times. The only keys to the tanks are kept with Mile High Marina management and Christensen Oil and Gas who accesses the fuel tanks upon seasonal deliveries as needed during the summer season.

Emergency Procedures

The purpose of this plan is to assure a prompt, effective response to any marine emergency that relates to safety of life, property and environmental protection.

In any emergency, the primary consideration is for personal and public safety. In the event of an emergency, involved persons should be removed from the area to safety in a manner that ensures the safety of all those involved. If a person is in the water, do the following immediately:

1. Throw any flotation device or anything that floats
2. Only proceed into the water wearing a flotation device that can support both the rescuer and victim
3. Professional help should be called immediately

As to property, surrounding uninvolved movable property such as boats, cars, trucks, trailers should be removed from the area. Do not cut loose a damaged or leaking boat from the docks as it could float into other boats or property. Once matters are under control and professional help has arrived, property should remain undisturbed until professional department investigations are complete.

In the event of a fuel or other hazardous material spill , oil and fuel sorbent materials are stored on the docks in the location designated on the attached Figure 1, and should be deployed as designed. In order to minimize environmental damage, debris, oil, and fuel spill source should be removed from the water and/or land as soon as it's safe to do so in accordance with local regulatory guidelines and direction.

The following checklist is posted inside the dock box near the fuel dispensers, inside near the fuel computer system, and retained by management for quick access.

Emergency Response Plan

1. Sound the Alarm – this is the first step in announcing and putting into action the Emergency Response Plan
2. Life Safety – the safety of personnel, customers, and the public is a first priority
3. It should be noted that many of these steps can happen simultaneously, including:
4. Shutdown pumping in event of a spill during any fuel transfer operation or an emergency at the fuel dispensers.
5. Shut off power to the fuel dispensers or affected area. There is one emergency shut-off located on the West side of the dock box (on the fuel dock) and another emergency shut-off on the front (East side) of building. See Mile High Marina Dock Schematic for locations of Emergency Shut-Off. Note that shutting off the power at either of these locations will prevent fuel from continuing to flow from the underground tanks.
6. Deploy Spill Kit materials (in the case of a fuel spill).

7. Eliminate potential sources of ignition such as open flames or sparks.
8. Call emergency personnel and related regulatory agencies.
9. Assign staff to meet and direct emergency first responders to the area.
10. Contact the Marina owner or manager.
11. Remove all uninvolved boats and equipment from the contaminated area.
12. Crowd control keeping the public at a safe distance and allowing emergency personnel access to the contaminated area

Materials

Fuel spill or fuel containment and clean up. If possible, safe, and trained to do so, identify and secure source of the discharge and contain the discharge with sorbents.

a. Sorbent pads are located in the dock box and the garage (See Figure 1)

b. Spill kit is located on the dock, near the fuel dispensers (See Figure 1)

c. Spill Kit contains the following products:

200 Sorbent Pads	2 Pairs of Nitrile Gloves
12 Sorbent Socks	2 Pairs of Safety Goggles
10 Sorbent Pillows	1 Box of Rags
5 Sorbent Booms	1 Copy of Emergency Response Guide
5 Waste Disposal Bags	

Containment Booms -The Marina Owner is working with its Engineer to determine the appropriate size and quantity. These will be located in the garage (See Figure 1)

Contact regulatory authorities and other response personnel and organizations.

Post Emergency Plan

1. Notify the Marina's insurance company of the incident
2. Photograph or video all damage caused to the affected area
3. Complete written Incident Report detailing event occurrence and steps taken
4. Protect against environmental damage from fuel or oil leakage. Use containment booms and absorption pads as necessary
5. Secure all vessels and docks for insurance investigation
6. Gather written statements from personnel and witnesses as to the fact pattern or circumstances that lead to the event
7. Cooperate fully with Fire Department and First Responders as they formally investigate the incident
8. Properly dispose of all contaminated hazmat materials and replace marina supplies immediately
    a. – The Marina has a secure hazardous waste disposal collection bin on site, in the garage for storage of any hazardous materials pending appropriate off-site disposal.

Emergency Education and Training

Management to conduct training seminars explaining the importance of the Emergency Plan and to ensure that personnel are aware of potential problems that exist at the Marina and the need for the Emergency Plan. Employee education is continuous throughout the operating season which will greatly improve the learning curve of staff. Once potential problems are understood, then the Emergency Plan can be introduced and understood as well.

The Marina schedules annual fire education training sessions with Will Adams of Mid-State Fire Protection, McCall Idaho. The location of all fire extinguishers is reviewed and the proper use of fire extinguishers are reviewed. As practice, each staff member is then required to deploy an extinguisher in order to fully understand how to use a fire extinguisher properly**.**

Security Measures

1) The Marina facility is open for gasoline sales 7 days a week 8am-7pm during the summer months (Memorial Day to September 30th). In the off hours of 7pm to 8am the pumps are locked, the computer software controlling the fuel pumps are turned off disabling fuel to the dispensers, and the dock box housing the computer systems is locked.

2) During the winter, fuel pumps are winterized and inoperable.

3) A trained Marina employee fuel attendant must dispense fuel. Customers are not allowed to dispense their own fuel or to self-fuel their boats.

4) There is one emergency power shut-off located on the West side of the dock box (on the fuel dock) and another emergency power shut-off on the front (East side) of building. Note that shutting off the power at either of these locations will prevent fuel from continuing to flow from the underground tanks.

5) All tank fill pipes are capped and locked when not in use; tanks do not have drain valves.

6) The dispenser pump controls are inside the dock box on the computer. The dock box is locked when the marina is closed and only authorized employees have the computer log in credentials.

7) Sorbent pads are used every time a boat is fueled on the gas dock to absorb any drips that may occur during fueling. Extra sorbent pads are located in the dock box and the garage.

8) Marina customers are encouraged to have proper fuel spill supplies on board their vessels at all times in the event of an inadvertent spill while away from the docks

    a. – Customers should also be reminded to always check their bilges for potential leaks prior to engaging bilge pumps.

Inspections

1) Owner and facility manager are trained to do visual inspections of fuel storage and transfer areas and equipment. Visual inspections are completed by owner/manager weekly during peak seasonal usage and upon each fuel delivery. Detailed inspections of tanks, lines/pipes and leak detector are completed by Nwestco annually. Records/certificates of approval are obtained from each inspection and kept in a Fuel Binder. Inspections are also completed by Idaho DEQ every three years. Certificates from DEQ are also kept by management in a Fuel Binder.

2) The liquid level gauges on the UST's are inspected and calibrated at least annually by Nwestco. UST's liquid level gauge-activated high-level alarm is inspected monthly and functionally tested annually following manufacturer's procedures by a qualified employee.

3) An assigned employee also visually inspects the dispensers on the fuel dock at least daily for indications of deterioration and discharges, including the transfer hoses, valves, and other fittings,.

4) If an employee encounters a spill during an inspection of the fuel storage or transfer equipment, the employee will immediately notify marina management and take the necessary actions.

5) An assigned employee ensures sorbent pads and spill kit are fully stocked.

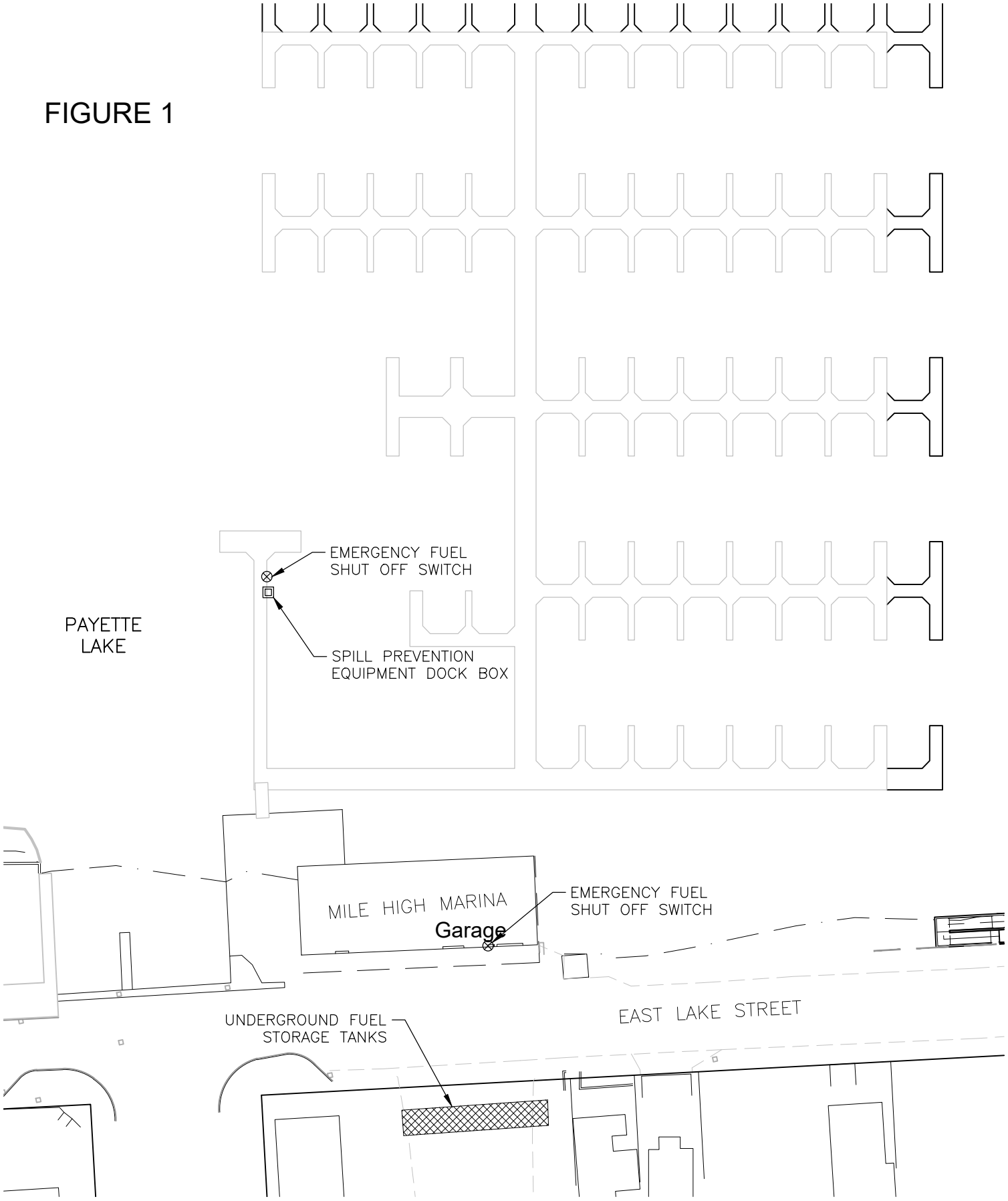
When calling 911, provide the following information:

1. Type of product spilled: gas, oil or unknown
2. Source of the spill: Boat, Marina Fuel Lines, or other
3. Quantity spilled: quarts or gallons
4. Wind direction and strength
5. Actions taken by Marina management and staff to prevent spill from spreading
6. Is the spill within a confined area?

Log the Spill Incident on an Incident Report Sheet and record the following:

1. Time and date of initial event notice
2. Type of product spilled
3. Quantity
4. Source of the spill
5. Location of the spill
6. Wind direction
7. What actions were taken
8. Names and contact information of all employees and other witnesses / parties involved
9. Time and date of final event resolution

FIGURE 1



NORTH
SCALE: 1" = 60'

CRESTLINE
ENGINEERS
323 DEINHARD LANE, SUITE C · PO BOX 2330
McCALL, IDAHO 83638
208.634.4140 · 208.634.4146 FAX

MILE HIGH MARINA
SPILL PREVENTION PLAN
EMERGENCY FUEL SHUT OFF LOCATIONS

PROJECT	23023	DRAWN	FIGURE NO.
DATE	11/7/2023	RFP	1 OF 1

Brett D. Smith PE, LG

Senior Environmental Engineer

Mr. Smith is a registered Professional Engineer and a licensed Professional Geologist with more than 36 years' experience as an environmental engineer and exploration geophysicist. He has extensive experience with the Spill Rule (aka the SPCC Rule or 40CFR112) and has been a guest speaker on numerous occasions. During the past 20 years, Mr. Smith has helped electric utilities, petroleum marketers, metal recyclers and other industry clients comply with the SPCC Rule, by preparing SPCC Plans, conducting Tank Inspections, as per SP001 (6th Edition) and conducting 8-hr SPCC Workshops for regulated clients.

Mr. Smith has extensive experience in the performance of environmental site assessments (ESAs) regarding commercial and industrial sites, which includes the design and performance of environmental and construction based geophysical surveys; the design and installation of groundwater monitoring systems; the design of engineering plans and operational narratives for solid waste landfills; the design and preparation of an underground injection control (UIC) permit; and the performance of approximately 300 Phase 1 ESAs.

Qualifications

Education

- M.S. – Geophysics, Colorado School of Mines, 1984
- B.S. – Biology, University of Utah, 1975

Registrations / Certifications

- Idaho State Professional Engineer (No. 17237)
- Nevada State Professional Engineer (No. 24542)
- Oregon State Professional Engineer (No. 85846)
- Washington State Professional Engineer (No. 37083)
- Licensed Professional Geologist, WA (No. 1478)

Specialized Training

- Ultrasonic Thickness Testing (tanks), since 2020
- OSHA 40-Hour Hazardous Waste Operations Safety Training; 1989
- OSHA 8-Hour Hazardous Waste Operations Refresher; annual since 1989
- Geophysical Surveying Methods – electrical resistivity, electromagnetics, magnetics; seismic refraction (shear and compressional wave)

Presentations / Articles

- *The SPCC Rule* – since 2003
- 8-hr SPCC Training Workshops – since 2018
- Article – *The SPCC Rule*, 2014

Selected Professional Experience

SPCC Plans for Puget Sound Energy, Western Washington — Worked with PSE's Environmental Compliance professionals developing Multi-Facility SPCC Plans based upon SPCC requirements set forth in 40CFR112 for 23 electrical substation sites located in western Washington State.

SPCC Plans for Benton PUD, Benton County, Washington — Worked with BPUD's Supervisor of Operations developing Multi-Facility SPCC Plans based upon SPCC requirements set forth in 40CFR112 for 23 electrical substation sites and one Operations Center located in Benton County, Washington State.

SPCC Plans for Coleman Oil Company, Idaho and Washington — Worked with Coleman Oil's Operations staff developing SPCC Plans based upon SPCC requirements set forth in 40CFR112 for 34 bulk oil storage and cardlock refueling facilities located in Idaho State and Washington State.

SPCC Plans for Busch Distributors, Idaho and Washington — Worked with Busch's Operations staff developing SPCC Plans based upon SPCC requirements set forth in 40CFR112 for 10 bulk oil storage facilities located in Idaho State and Washington State.

SPCC Plans for Calbag Metals Company in Oregon and Washington — Worked with Calbag Metals' Environmental Compliance staff developing SPCC Plans for based upon SPCC requirements set forth in 40CFR112 for two complex metals recycling facilities (Portland, Oregon and Tacoma, Washington) having numerous secondary containment systems and oil-based fluids handling challenges.

SPCC Plans for Tessenderlo-Kerley, Inc., Idaho and Washington — Worked with TKI's Environmental Compliance staff developing SPCC Plans based upon SPCC requirements set forth in 40CFR112 for two fertilizer processing facilities located in Idaho State and Washington State.

Environmental Compliance Assessment System (ECAS); Minnesota State Army National Guard — One of five Team Leaders who supervised compliance assessments pertaining to such federal regulatory requirements as RCRA, CERCLA, TSCA and FIFRA regarding national guard facilities located throughout the State of Minnesota. Prepared ECAS Reports that discussed regulatory deficiencies and recommended best management practices to achieve sufficient regulatory compliance at all facilities.

ATTACHMENT 12

December 9, 2023

Sam Worley
Mile High Marina
P.O. Box 3090
McCall, ID 83638

RE: Fuel Spill Response Capability of the Mile High Marina located at 1300 E Lake Street

Sam,

You recently contacted me regarding concerns that Morgan Stroud, EI, Staff Engineer with the City of McCall's Public Works Department (the City) has regarding the ability of the Mile High Marina (Facility) to adequately respond to onsite fuel spills. It is my understanding that the City requires a Spill Prevention, Control and Countermeasure (SPCC) Plan (if appropriate) or an equivalent spill response document that addresses future fuel spills at your Facility.

The City indicated the following (assumed not all-inclusive) items should be addressed in the spill response documents maintained at your Facility:

- A Facility Diagram showing locations of fuel-storage tanks and surface drainage.
- Fuel-storage containment, if any.
- Onsite inspections.

You provided me with 1) a *Spill Prevention, Control and Countermeasure Plan*, prepared by you, 2) a diagram of the Facility's fuel shut off switches, prepared by Crestline Engineers of McCall and 3) the *Spill Control and Response Plan* prepared by Christensen, Inc. of Richland, Washington.

You have informed me that the onsite storage of oil-based liquids comprises two 10,000-gallon underground storage tanks (USTs) containing fuel for motorized watercraft and that all other (if any) oil-based liquids storage (55-gallon containers and larger) never exceeds 1,320 gallons aggregate. The UST fuel storage is specifically regulated by 40CFR280 and is administered by the Idaho State Department of Environmental Quality (IDEQ), whereas the storage of aboveground oil-based liquids storage is regulated by 40CFR112 (aka the SPCC Rule), but *only when* the aggregate storage exceeds 1,320 gallons.

After reviewing the above-referenced documents, I have acquired the following Findings of Fact regarding the Facility's ability to effectively handle fuel and other oil-based fluid spills:

1. The Facility does not need an SPCC Plan, since it stores much less than 1,320 gallons of oil-based liquids and/or fuel in *aboveground* tanks or containers.

2. The above-referenced documents adequately address 1) fuel storage containment (ie, USTs), tank-filling procedures, associated spills, spill and stormwater drainage directions and the location of the nearest storm drain inlet, 2) motorized watercraft point-of-service (fuel dispenser) spills, delivery system shut off switch locations and required response measures, 3) the Facility layout and the location of the USTs, 4) the location of spill response materials and a listing thereof, 5) Facility security measures to prevent unauthorized access to fuel dispensers, 6) weekly (owner-based) and annual (third-party professional) inspections of fuel-storage and transfer systems and 7) Facility inspections by the IDEQ every three years.

In conclusion, my review finds the above-referenced documents to adequately provide legible and understandable spill response measures and a listing of the equipment needed to effectively and promptly contain any fuel spills that may occur during UST-filling or during watercraft refueling at the marina-based dispenser.

Provided that Facility personnel *understand* and *diligently* follow the above-referenced spill response documents, the water quality of Payette Lake is being responsibly protected by the Mile High Marina.

Please call me if you have any questions whatsoever.

Sincerely,

Brett D. Smith PE, LG
Managing Principal
Professional Engineer / Licensed Geologist
(LG registration in WA)
(PE registrations in ID, NV, OR and WA)

Education

- BS, Construction Management, Boise State University

Registrations / Licenses

- Idaho Public Works and Construction Manager License ID (38690)
- OSHA 30 Hour

TIM FOLEY

Construction VP

Areas of Specialty

- Construction projects in controlled access locations
- Demolition and general civil improvements
- Renovation of large industrial facilities
- Construction of water/wastewater treatment facilities since 1997
- CM/GC Contracts, Design-Build, & GMP terms
- Constructability reviews
- Risk assessments and mitigation

Tim Foley brings 27 years of hands-on experience and has led multi-million-dollar projects from the planning stages, design, construction, and startup and commissioning. He brings a unique combination of design and construction experience, leading constructability reviews and value engineering during early work stages, managing the engineering team to optimize the design, and monitoring construction and startup. Under his supervision, he has coordinated a variety of construction crews and subcontractors and also coordinated a variety of discipline design leads and construction managers on our design-build projects. Often serving as the client's single point of contact, he has successfully delivered projects within budget, on schedule, and with outstanding quality and safety results.

Special Access: His expertise in the single point of contacting special access programs where he managed the demolition and replacement of complete plant infrastructure for the facility's rotary UPS. All work required the facility to remain online while all work was completed, including complete FIST (fully integrated system test) before the installation at the facility. His level of security clearance is TS/SCI, which has enabled him to work in restricted areas on projects in the United States and overseas.

Alternative Contracting: He has delivered complex construction projects utilizing several contracting mechanisms, including CM/GC, EPC, Design-Build, and the traditional Design-Bid-Build.

Constructability/Assessments: He provided a constructability review for our $150M West Kauai Pumped Storage Energy Project and is currently assessing operations for a hydropower facility in North Washington.

Specific Elements: Recently, he has managed a team of construction managers for a wide variety of projects, including the rehabilitation of a spillway, installation of a large butterfly valve, development of a tunnel, demolition new powerhouse, and construction a new hydro facility including

spillway, powerhouse, equipment, and supporting infrastructure. He has extensive experience with pressurized pipelines, mechanical equipment installation, and electrical/control systems integration.

CMGC delivery: He has completed previous projects using the CMGC contracting method, has managed the construction of piping and heavy civil projects with in-water work and hazardous materials, and has participated in Pre-Construction services in close coordination with owners and owner's engineers.

Accommodations

- Idaho Construction Leadership Academy – Top Graduate
- TS/SCI – US Intelligence Department

Relevant Project Experience

Grant County PUD; -Priest Rapids Turbine/Generator Rehab Audit-, WA | Contract Reviewer. This $500M, 10-year, turbine-generator rehabilitation program using 16 subcontractors, consists of disassembling, repairing, and replacing damaged components of 10 turbine-generator units. Major turbine components include: turbine shafts, stay vanes, headcovers, wicket gates, and thrust brackets. McMillen is identifying methods to increase efficiencies, refine scope, evaluate the reasonableness of cost, and understand potential schedule and construction risks. Tim was provided, overall contract review, subcontract review, financial forecasting, labor productivity review. ($150,000; 05/2022 - 01/2023)

City of Boise; Boise River Whitewater Park Phase II Design-Build, ID | VP of Construction. This project included constructing in-river drops, chutes, natural slaloms, jetties, and instream boulders to maximize the recreational experience for kayakers and surfers. Work included excavation, demolition, erosion and sediment control, and pile driving. Dewatering required two cofferdams to divert the river and dewatering wells that operated during the four months of in-river work. Sequencing and phasing of work were critical due to the short window of time they could work in the river. The project was completed with zero days away cases, no time, and within budget. ($10,280,234; 06/2016 - 07/2019 & 2020 - 2021)

Metropolitan Water Dis S Cal; Colorado River Aqueduct Pumping Plants Seismic Retrofit, CA | VP of Construction. We were the prime contractor to seismically upgrade five 6.9 kilovolt pumping plants. The project strengthened the existing concrete buildings by installing concrete wall overlays, new buttress walls, micropile foundations, and new drag beams. The work included demolishing the existing transformer oil lines and re-routing existing electrical conduits. We also removed the existing concrete decks for construction access, replaced them with new ones, and repaired cracks in the concrete walls. ($9,365,702; 12/2016 - 08/2018)

Central Rivers Powers US, LLC; Dietrich Drop Hydroelectric Gate Improvement Design-Build, ID | VP of Construction. This hydro facility experienced successive failures to an intake gate and needed concrete repair work. Our contract included improvements to several elements of this hydro project, including an emergency repair to the 5,000-pound bypass tainter gate system with new hoists and controls. Work included site survey, dewatering with the use of pumps, demolition and removal of deteriorated materials, placement of concrete and grouting, fabrication inspections, application of epoxy coatings on the intake gate, and installation of guardrails near the hoist system. Tim led the design-build team to design and construct a cofferdam in the intake canal, inspecting the turbine conduit to retrieve debris from the failed gate and dive-inspecting the turbine to retrieve any additional debris. ($1,900,000; 08/2017 - 03/2020)

Portland General Electrical Co; Faraday Repower CMGC, OR | Project Manager/Construction VP. Scope of

work also included the construction of a new reinforced concrete powerhouse (multi-story 122'x60'), installation of 2 higher-efficiency vertical Kaplan turbine/generator units, welded steel penstock, trash rake/rack system, new access roads, a bridge, the installation of 2 new draft tube bulkhead gates (19'x8'), slots, and 15-ton monorail beam and wire rope hoist system, and all balance of plant mechanical and electrical systems including the tie-in to the grid. Work also included earthwork, erosion control, drainage systems, and environmental monitoring. Challenges include a small construction footprint, penstock on steep slopes, and proximity to the river, requiring a cofferdam and dewatering system. ($82,500,000; 2019 - 12/2022)

Grand Teton National Park; -Jenny Lake Trail Renewal & Interpretive Plaza Task Orders-, WY | VP of Construction. Included construction at a major visitor area in the Grand Teton National Park. Work included managing superintendents for the demolition and construction of various site features. Task included installing new water production and sewer treatment/collection systems, foundations for signage, exhibits, and placement of granite boulders according to landscape architect specs. We delivered the eight months early, under budget, with zero incidents and no near misses. ($3,621,311; 05/2016 - 09/2018)

USACE Albuquerque District; John Martin Reservoir, Stilling Basin Sediment Removal & Dewatering, CO | VP of Construction. McMillen performed as the General Contractor for the sediment removal and concrete rehabilitation work performed in the stilling basin pool of the John Martin Dam. This construction project included site preparation, dewatering of the stilling basin, excavating and hauling approximately 60,000 CY of sediment removal in the stilling basin, sediment disposal and grading operations, haul road maintenance and dust control, concrete repairs, and relocation of sediment. The project was completed with no injuries, ahead of schedule, and within budget. ($4,815,116; 09/2018 - 04/2019)

Oahu Public Works; Keehi Transfer Station, HI | Project Manager. McMillen completed structural and mechanical renovations of the existing transfer sort and weighing stations including demolition, excavation, concrete, and mechanical installations. All works were performed within an operation facility requiring extensive customer coordination and installation of safety measures for personnel and plant. ($2,600,000; 2013 - 2018)

Hawaii Fire Department; Waipahu Vehicle Maintenance Facility, HI | Project Manager. As the subcontractor, for this $8.6 million project, our firm's construction crews excavated, backfilled, and compacted the contractor staging area and removed and replaced concrete structures. We removed the construction entrance and existing concrete, compacted the subgrade at the asphalt pavement, set steel bollards, and drilled and prepared the dowels at the existing footing and concrete. ($72,601; 04/2017 - 08/2017)

County of Hawaii; Kealakehe Wastewater Treatment Plant Aeration Upgrade & Sludge Removal, HI | Program Manager. This wastewater treatment plant's aeration upgrade restored the facility's treatment capacity to its intended 5.1 million gallons per day. Our scope of work included installation of 316 stainless steel air headers, procurement and installation of 2 Siemens energy automation blower systems, a new course bubbler system, a programmable logic controller with complete site automation, replacement of 3 energy automation vertical turbine effluent pumps, electrical recapitalization, sludge removal and processing, high density polyethylene reservoir/lagoon liner system, and installation and startup of dissolved oxygen sensors. ($6,831,089; 06/2017 - 10/2017)

Gay & Robinson, Inc; Olokele Hydroelectric, HI | Project Manager. This project replaced an existing 1 MW hydroelectric facility built in 1921. The new run-of-river facility generates approximately 6.7 MW of power with an annual generating capacity of 20,000 MW/h. The new hydro facility includes a new diversion dam, 4,000 feet of pipeline, a new powerhouse, and a new Canyon Industries 6.7 MW two-jet horizontal Pelton turbine and generator. McMillen served as the general contractor, we self-performed the construction and managed local

specialty subcontractors. Upon completion, we assisted with start-up activities. Tim provided risk assessments, QA/QC, factory acceptance testing (FAT), and safety oversight. He had direct oversight for in-house construction managers who self-performed much of the work, including concrete crews, pipe, etc., and provided oversight of several subcontractors. He provided technical input during construction and led the startup and testing. He was responsible for the overall schedule, budget, and contract management and accumulating costs against an established GMP. ($14,842,174; 07/2017 - 12/2018)

Confidential Owner; Solar H Facility, HI | Project Manager. For this $15 million dollar project, McMillen's construction provided seismic stabilization to the installation of structural concrete and steel members. Tim led the construction effort working with local resources to execute this project. ($18,721; 2018)

Avista Corporation; Nine Mile Dam Sediment Bypass Design-Build Improvements, WA | Construction Project Manager. The purpose of this project was to upgrade the inoperable sediment bypass system (SBS), which included a new 50' tall fabricated steel intake structure with a 12'x10' wheel roller gate with rope hoist, a new Kunz trash rack, and 18'x10' bulkhead; a knife gate inside the powerhouse; a cable-mounted segmented debris boom; replacement of pre-cast access bridge; and the automated controls to integrate the new components into the existing system. Challenges included short work windows with an accelerated schedule, coordinating active facility operations, and working in the wet with a diving team. Tim's team managed the construction and delivered the project within the established GMP. He participated in constructability reviews and value engineering and assisted the project closeout and commissioning. ($8,600,000; 01/2017 - 01/2019)

Sacramento Municipal Utility; South Fork Powerhouse Design-Build, CA | Program Manager. Scope of work includes design and construction of a 40' x 60' powerhouse, a new hydraulic connection to an existing tunnel, the installation of a slide gate (14' x 11'), 36-inch and 78-inch butterfly valves, a 60-inch fixed cone valve, and a penstock connection to the powerhouse and cone valve. The project included cofferdams/dewatering in the river, partial tunnel demolition, and a concrete transition from a 5-mile-long hard rock tunnel into the adit tunnel. Other site work included culverts and excavation/backfill site work. Tim participated in value engineering and risk assessments, fostered QA/QC and safety onsite, managed FAT, and led the startup and testing. ($16,201,707; 06/2016 - 01/2021)

PacifiCorp; Naughton Plant Zero Ash Transport Discharge Design-Build, WY | Design-Build Project Manager. As design-build lead, McMillen provided the design, construction, and commissioning of a new standalone water treatment plant for three cooling tower units. The facility treats the spent cooling water before releasing it into the local environment. Tim served as the primary contact for PacifiCorp and managed a multi-disciplined team to design, construct, and commission this facility. He was ultimately responsible for delivering the project on time, within budget, and according to contract terms. He oversaw QA/QC and promoted a safe working environment. Our firm was retained to design-build a new cooling tower blowdown, suspended solids removal treatment system for three cooling tower units. We were able to complete the project without interruption to the existing operations. Tim's crews installed two new stainless steel flocculation tanks and two multi-component "Westech – Super-Settler" clarifiers, including sludge blowdown systems. He used a crane to place the floc tanks in the building through the roof braces and connected them in place. ($4,823,956; 04/2017 - 11/2018)

Yakama Tribal Council; Melvin R. Sampson Coho Facility EPC, WA | Construction Manager. Our team was responsible for the early concept and final design and self-performing the construction. Scope of work included the development of new groundwater and surface water supply and treatment systems. Additional elements consisted of an adult holding and spawning, egg prep and incubation, and early rearing. Partial re-circulating aquaculture systems utilized dual drain circular grow-out tanks, a heat exchanger with temperature control and

energy recovery, a facility building, and outdoor raceways. ($22,912,261; 02/2016 - 09/2021)

Kauai Island Utility; West Kauai Energy (WKEP), HI | VP of Construction. McMillen is leading the design, procurement, and construction of this new pumped storage project under an EPC contract. It contains both rehabilitation of existing infrastructure and new construction. New aspects of the project include six miles of pressurized penstocks, two new hydropower stations, gate and intake structures, and a pump station. ($150,000,000; 10/2018 - 12/2027)

Klamath River Renewal Corp; Klamath River Renewal - Owner Representative, CA | VP of Construction. For this $450M program, we are supporting the decommissioning and removal of four hydroelectric dams on the Klamath River. The goal is to create a free-flowing river condition, volitional fish passage, and site restoration. Our responsibilities include guidance for the technical design and the administration of a progressive design-build contract. McMillen is also providing design and construction management on additional improvements related to the dam removals on the Klamath River. ($5,467,972; 12/2019 - 01/2024)

Idaho Power Company; Upper Salmon B Reject Gate Replacement, ID | Constructability Review. Scope of work included a feasibility study, detailed design, FERC support, and construction sequencing to replace the gate and concrete gate and spillway structure, two vertical spillway roller gates (17’ x 21’), electrical controls, and the 40-ton hoist structures. Design tasks included site dewatering, design of a cofferdam and flow diversion, concrete spillway design, including an uplift assessment. Design sequencing required hydraulic modeling and site modifications to ensure environmental flows for endangered species downstream of the reject gates during construction. Tim provided a consult for the installation of the gates. ($680,000; 01/2019 - 07/2021)

Puget Sound Energy; Lower Baker Dam Debris Boom Design-Build, WA | VP of Construction. We completed designing and constructing a new 2,800-foot debris boom to replace the existing system. Project elements included geotechnical investigations, FERC coordination/submittals, procurement, demolition and removal of the existing boom and its shore anchor systems, installation of the debris boom system, and commissioning and testing. We also provided design-only services to modify the existing Floating Surface Collector Exclusion Net System. ($3,460,201; 12/2017 -12/2018)

Client Name; ADF East (Aerospace Data Facility) CM/GC, | Project Manager* CM/GC contract for the demolition and replacement of complete plant infrastructure for the facility's rotary UPS. All work required the facility to remain online while all work was completed including complete FIST (fully integrated system test) before the commencement of installation at the facility. Tim was the primary contact for the client and participated in a risk assessment, FAT, and startup and commissioning. (2015-2017)

Client Name; Arrowhead Canyon Booster Stations, | Project Manager* Tim managed the construction of two 36,000-gallon booster stations, the installation of necessary instrumentation and controls for United Water's SCADA system, and the start-up of mechanical pumping components and inline pressure control devices. Despite challenges from developer involvement and an inaccessible site, the project was completed and is currently serving new United Water customers. The project was the first for United Water intended to minimize pumping energy required to service its end users, consequently lowering distribution costs. (2001-2003)

StarKist Tuna; Fish Processing Facility, | Design-Build Lead* As the owner of Foley Management Group, Tim served as the design-build lead for a project involving the removal of the deep-sea disposal processes through barges and included the processing of high-strength waste to be processed into cat food for distribution to a variety of locations throughout the world. ()

CLIENT NAME; Garden City Groundwater Filtration, ID | Project Manager* This was for an iron and manganese treatment project utilizing twin sand filtration wellhead treatment. The project consisted of new pressure filter buildings with on-site sodium hypo-chloride generation at two well sites. The two sites were constructed concurrently for the on-time start-up. (2002-2003)

Confidential Client; Industrial and Domestic Water CM/GC, | Project Manager* Tim served as the client contact for this CM/GC contract and was responsible for completing the project within a predetermined GMP and baseline schedule. He managed a construction crew of 25, managed all logistics, FAT, crew assignments, and subcontractors. Work consisted of the recapitalization of the site's existing potable water system with a new RO (Reverse Osmosis) skid-mounted treatment facility. The work included the removal of existing above-grade steel tanks and a new transmission and distribution system. The project included a new finished water pumping system and completely automated SCADA control system; integrated into the site's existing Wonderware platform, offering seamless integration for the site operators. All materials required for this effort were American Standards, thus requiring extensive shipping logistics. (2013)

City of Boise Public Works; Lander Street Wastewater Treatment Plant Renovation CM/GC, ID | Superintendent/Project Manager* The CM/GC contract included miscellaneous improvements to an existing grit chamber, modifications to an existing primary clarifier, piping and equipment modifications, and installation of a PVC liner in the deteriorated concrete grit chamber. Scope of work included removal of hazardous materials. Tim coordinated a multi-discipline team during the construction and startup and commissioning to bring the facility online. This project was nominated and awarded the Rocky Mountain Division - American Public Works Association - Contractor of the Year Award by the APWA for its teamwork and cooperation on this project. (1999-2000)

United Water; Maple Hills Filter Building, ID | Design-Build Manager* Tim was the Project Manager for the construction of a sand filtration wellhead treatment project (horizontal pressure filtration facility). The project consisted of a new pressure filter building with on-site sodium hypo-chloride generation. As Design-Build Manager, he managed the detailed design. The project and coordination of Owner Furnished Equipment to accomplish on-time start-up. (2004-2005)

United Water; Marden Water Treatment Plant Expansion, ID | Project Manager* While employed by Contractors Northwest, Inc., he managed the construction of the Marden Water Treatment Plant. It was a difficult 8-mgd expansion to the existing 8-mgd treatment plant. The project was a negotiated-partnering contract with United Water – Idaho. The concrete for this project was a specially designed silica fume mix. All the concrete for the project was placed during the winter with a difficult water cure specification. The project was completed 3 months ahead of schedule and 150,000 dollars under budget. The contract documents originally included 8 weeks of allowable plant shutdown. Yet through extensive coordination and pre-planning, the shutdown time was reduced to 3 weeks. United Water was able to produce and distribute water to its customers nearly two months earlier than anticipated. (2005)

Client Name; Meridian Wastewater Treatment Facility CM/GC Improvements, ID | Project Manager* This CM/GC project included construction to accommodate the installation of a new primary clarifier with new splitter capability, two aeration basins including a lift station, a new secondary clarifier with a splitter box, and post aeration facility. Extensive yard piping was included to enable these new processes to function throughout the existing the treatment plant. Mr. Foley led the startup and commissioning team to sync the facility with the existing operations. (2006)

Client Name; Payette Wastewater Treatment Plant Modification CM/GC, ID | Project Manager* This CM/GC

project consisted of the construction of a new grit screening facility, screw pump demolition and installation, underground piping installation, and a new 24" trunk sewer. This contract consisted of two new structures and numerous modifications to the existing infrastructure. The key to the project's success was through equipment procurement and manufacturer coordination. Through effective coordination with various national and international manufacturers and engineering personnel, the equipment and the project were substantially complete seven weeks ahead of the project's anticipated completion date. Scope of work included removal of hazardous materials. Tim led the startup and commissioning of all equipment. (2002)

Client Name; Weiser Water Treatment Plan, ID | Project Manager* This project was a major addition to Weiser's Water Treatment Plant. This project consisted of a new Chemical pre-treatment building, a 1,500 CY heavily reinforced concrete sedimentation basin, and a 350,000-gallon concrete water storage tank. The project was completed successfully–on schedule, on budget, and team-oriented. (2002-2004)

Client Name; West Boise Wastewater Treatment Plant, ID | Project Manager* The project scope included the complete renovation of two existing 3+ million-gallon basins and the construction of a new plant control building. His responsibilities involved close coordination with the contractor (JCC), the designer (CH2M-Hill), and the City of Boise. The project was completed months ahead of contract completion. (2003-2005)

*Project completed while employed by previous firm.

Work History

McMillen, V.P. of Construction and Business Development (04/2017 - Current)
| ESI Construction, Senior Project Manager - Federal Division (04/2011 - 04/2017)
| Foley Management Group, President and Owner (10/2006 - 04/2012)
| JC Constructors, Inc., Project Superintendent/Project Manager (07/1999 - 10/2006)
| Contractors Northwest Inc., Project Manager/Project Superintendent (12/1997 - 09/1999)
| United States Postal Service, Project Manager (1997 - 1999)
| Toothman-Orton Engineering, Inc., Project Engineer (05/1995 - 05/1996)
| Micron Construction, Inc., Project Engineer (05/1994 - 08/1994)
| Jordan-Wilcomb Construction, Inc., General Laborer (05/1992 - 08/1992 and 05/1993 - 08/1993)

Awards

- Public Works Contractor of Year - Rocky Mountain District, , 2000

Education

- ME, Civil Engineering | Water Resources Focus, University of Idaho
- BS, Geosciences | Hydrology Emphasis, Boise State University

Registrations / Licenses

Professional Engineer
- ID (EIT - in process 12/2023)

ERICA KOPPES

Staff Geomorphologist

Areas of Specialty

- Hydraulic modeling & analysis
- Scour analysis
- Sediment transport, river hydraulics & fluvial geomorphology
- Floodplain modeling/mapping

Erica is a geomorphologist performing hydrologic and hydraulic analyses including hydraulic modeling for bridge design and floodplain modeling for No-Rise Certifications and FEMA LOMR/CLOMRs. She has supported permitting for environmental compliance documentation, floodplain development permits, joint permit applications, etc. She has served as a survey technician and performed topographic and construction surveys using various GPS equipment.

Relevant Project Experience

Mainspring Conservation Trust; Ela Dam Removal Review, NC | Geomorphologist. McMillen is providing services in connection with the potential acquisition of the Bryson project (FERC no. 2601) and the subsequent removal of Ela Dam, which is a project work therein project. ($5,000; 08/2023 - Ongoing)

Energy Northwest; Packwood Hydroelectric Relicensing, WA | Geomorphologist. McMillen served as Energy Northwest's consulting project management team throughout the relicensing process from 2004 to 2010. The outcome of the process was that the Packwood Hydroelectric project was issued a new 40-year operating license. Our firm was then selected to provide all consulting services related to implementing compliance with the license. To date, work has included strategic planning activities; developing management plans and a comprehensive compliance matrix; initial agency interaction; and reintegration with the Federal Energy Regulatory Commission. Erica is responsible for calculating sediment gradation size for the proposed project and determining quantities for the proposed restoration of Lake Creek, including boulders for channel design, logs for ELG structures and anchors. ($4,014,328; 2013 - 2023)

Stanford University; Searsville Watershed Restoration, CA | Geomorphologist. McMillen serves as the Design-Build lead, including analyzing alternatives, value engineering, environmental and permitting support, life-cycle cost analysis, risk assessment, final design, and construction. The project involves the construction of a 14-foot tunnel at the

base of the 60-foot-tall dam that will be fitted with a roller gate. Opening the gate means 1 million cubic yards of sediment will be flushed out of the reservoir for 4 to 8 years. (; 2020 - 2025)

Sonoma County Water Agency; Potter Valley Restoration, CA | Geomorphologist. McMillen conducted a feasibility evaluation of possible modifications to the existing Potter Valley project with investigations on both the Eel and Russian River Watersheds in Northern California. Work included an evaluation of volitional and non-volitional fish passage, dam decommissioning, a power production model for the powerhouse, investigations of tunnel capacity, and the alternatives for a pump back system at Lake Mendocino. Erica is responsible for selecting a reference reach for the Eel River, defining a new channel slope and designing the channel geometry and cross-sectional shape of the proposed channel. ($1,830,000; 2016 & 2019 - 2021, 2022 - Ongoing)

City of Seattle; South Fork Tolt Relicensing, WA | Geomorphologist. McMillen was selected to work as an extension of Seattle City Light and Seattle Public Utilities staff to accomplish all phases of the South Fork Tolt Relicensing process, including the Pre-Application Document (PAD), Notice of Intent (NOI), and License Application filing. This multi-year, phased contract includes a term of engagement extending through the target license issuance date of July 2029. ($3,200,000; 01/2023 - 11/2029)

State of California; Rindge Dam Removal and Malibu Ecosystem Restoration, CA | Geomorphologist. McMillen's team will provide A/E services including, a series of technical studies to update and finalize technical work previously performed for an Integrated Feasibility Report, including sediment transport analysis that considers both natural transport and trucking options, surface flow modeling, and preparation of the engineering plans for barrier remediation. In addition, we are responsible for preparing a dam removal design in sequential phases up to 90% design, environmental permitting, and communication and public outreach. ($6,034,659; 03/2023 - 08/2025)

Idaho Transportation Dept.; Old Hwy 30/Plymouth Street Bridge, ID | Water Resources Scientist* Canyon Highway District #4 and the City of Caldwell proposed to construct a new Boise River crossing near the existing West Plymouth Street Bridge in Canyon County, Idaho. In addition to the proposed crossing of the Boise River, the project included two culvert crossings over the Riverside Canal. Erica was responsible for modeling the hydraulics for the Riverside Canal for the culvert designs using a 1D Hec-Ras model and preparing an ITD Bridge Hydraulics Report. Erica prepared a 1D HEC-RAS model for the existing and proposed conditions of crossings over the Riverside Canal and assisted in modeling of the crossing over the Boise River. Erica conducted a scour analysis for the proposed culvert design and recommended scour countermeasures. (2020-2022)

Idaho Transportation Dept.; Browns Creek Bridge, ID | Water Resources Scientist* Idaho Transportation District #3 proposed to replace the SH 78 crossing over Browns Creek. The existing crossing is a two-span concrete structure supported on timber piles constructed in 1954. The proposed structure is required to meet the minimum low chord design elevations required by ITD. Erica was responsible for preparing a Hydraulic Risk Assessment Memo (HRAM). The HRAM included hydrologic analysis, a review of all past hydraulic/hydrologic studies, flood risk assessment, geomorphic assessment, and qualitative scour risk assessment. Erica performed a hydrologic analysis for Browns Creek using USGS stream gage and StreamStats data, USGS Open File Report 81-909, and a Rational and TR-55 Methods comparison. (2020-2023)

Local Highway Technical Assistance Council (LHTAC); Leading Idaho Local Bridge Program, ID | Water Resources Scientist* LHTAC proposed to replace local bridges in Idaho that are in poor condition. Erica was responsible for preparing a 1D HEC-RAS model to simulate proposed and existing conditions for bridge design. Erica prepared a truncated hydraulics report for multiple bridges, which included a hydrologic, hydraulic, and scour analyses and recommended scour countermeasures for bridge design. ()

Trout Unlimited/WSDOT; SR 97 Johnson Creek, WA | Water Resources Scientist* The Client proposed to subdivide a parcel of land in Elmore County. Base Flood Elevations (BFE) needed to be established for the project area mapped as Zone A on FEMA Flood Insurance Rate Map (FIRM) panel 1602120250B. A Letter of Map Revision was required to complete the project proposed by the Client. Erica was responsible for preparing a 2D informed 1D HEC-RAS model for the project area. Erica established BFEs for the project area located on the South Fork Boise River. Erica prepared a LOMR application and established a 100-yr floodplain and floodway for the project area. Erica prepared a project narrative, Annotated FIRM, Topo Work Map, floodplain development permit, and all the application material for the LOMR. The project narrative included hydrologic/hydraulic analyses, FEMA product review, proposed model results and floodway simulation. (2021-2022)

*Project completed while employed by previous firm.

Relevant Educational Coursework

BS, Geosciences | Hydrology Emphasis Boise State University	**ME, Civil Engineering | Water Resources Focus University of Idaho**
• Introduction to Geography	• Aquatic Habitat Modeling
• Evolution of North America Water in the West	• Fluvial Geomorphology/River Mechanics
• Earth's Climate Past, Present and Future	• Engineering Fluid Mechanics
• Introduction to GIS	• Sedimentation Engineering
• Seeing Unseen: Introduction to Geophysics	• Watershed Science/Management
• Earth Sciences	• Remote Sens/GIS Integration
• Geomorphology	• Environmental Hydrodynamics
• Earth Materials	• Fundamentals of Research
• Sedimentation and Stratigraphy	• River Modeling Management
• Hydrology	• River Restoration
• Aqueous Geochemistry	
• Sustainability of Natural Resources	
• Structural Geology	
• Hydrogeology	

ATTACHMENT 15

Dear Mr. Millemann

We appreciate the opportunity to assist with the evaluation of Mile High Marina's wave attenuation boom and boardwalk improvements. Below please find a brief company bio and a list of a few relevant projects.

COMPANY BIOGRAPHY

McMillen, Inc. (McMillen) is a design and build firm offering clients realistic solutions. We provide engineering, environmental, and construction services with scalable, multi-disciplinary capabilities. Our staff brings best practices to the water resources industry serving the energy, dams, infrastructure, fisheries, and natural resources markets within the United States, Canada, Australia, and France. For nearly two decades, McMillen has established a reputation as a trusted and knowledgeable partner—80% of our work is from repeat clients. Many of our client relationships are as long-standing as the firm itself. Throughout this time, we have proven reliable, adaptable, and forward-thinking.

McMillen balances technical precision with collaborative delivery throughout all project phases. We have the resources and expertise to contribute to a project at the feasibility and planning stage, navigate the regulatory and permitting requirements, develop detailed designs, self-perform construction, and participate in startup, testing, and commissioning. We offer strategic planning, technical expertise, comprehensive project management, and integration of multi-disciplinary studies for traditional and alternative project delivery methods.

PROJECT EXAMPLES

1. Katherine Albertson Park – Project included the design and installation of pedestrian walkways in an existing riparian reserve. Project included in-water installation of structural foundations and composite walkways.
2. Boise City – Whitewater Surf – Project required the diversion of a ¼ mile stretch of the Boise River for the installation of concrete wave feature including Obermeyer Bladder Dams and wave feature form blocks.
3. Brownlee Reservoir – On this project McMillen launched a barge into the reservoir and installed 135 concrete anchors to secure a new debris boom. The work was executed with a barge mounted crane and materials supply vessel which supplied anchors and cabling to the hoisting operation.

Sincerely,

Tim Foley, Vice President

1471 Shoreline Dr, Ste 100
Boise, ID 83702
+1 (208) 342–4214
mcmillen.com

Technical Memorandum

To:	Sam Worley	Project:	McCall Marina
From:	Tim Foley, McMillen, Inc.	cc:	
Prepared by:	Erica Koppes, Geomorphologist	Job No:	24-003
Date:	12/01/2023		
Subject:	Turbidity and Physical Damage Concerns for the New Wave Attenuator Breakwater		

Revision Log

Revision No.	Date	Revision Description

1.0 Mile High Marina Wave Attenuator Breakwater

Mile High Marina, LLC plans to replace the existing, aging log boom with a new wave attenuator—a fixed breakwater system. The system will be located nearer the marina boat slips and will include a debris boom, wave attenuation curtain, and a boardwalk with a 10-foot composite deck for public use. This breakwater system will be anchored in place with cables and concrete blocks. A crane barge will be used to place the concrete blocks on the lakebed during low water. There are no plans to remove material from the lakebed during the placement of the concrete blocks.

Removal of the existing log boom breakwater – the existing boom does not have anchored piers making it unnecessary to remove any material from the lakebed during removal of the existing log boom. Therefore, no disturbances are anticipated to the lake bottom associated with the removal of the existing boom and this Technical Memorandum focuses on the effects on turbidity and the City's intake line from the placement of the concrete anchors for the new wave attenuator system.

Publicly available data and preliminary project plans, provided by Millemann Pemberton & Holm LLP, were reviewed. The information summarized in this technical memorandum

addresses concerns of unwanted turbidity and provides an analysis of the potential for damage to the Village of McCall's submerged raw-water pipe inlet.

The provided plans (dated February 8, 1957) were georeferenced to compose the map in Figure 1. McMillen, Inc. used this data to digitize Payette Lake pipeline where it connects to the shoreline pumphouse. The plans locate the pipe approximately 950 feet from the pumphouse at a depth of 73.6 feet. The low-water relative elevation is 93.6 feet. The orientation of the pipe was provided by the city. No bathymetric data in the vicinity of the Mile High Marina was available to confirm elevations or depths. The closest disturbance to the pipe inlet is 352 feet away.

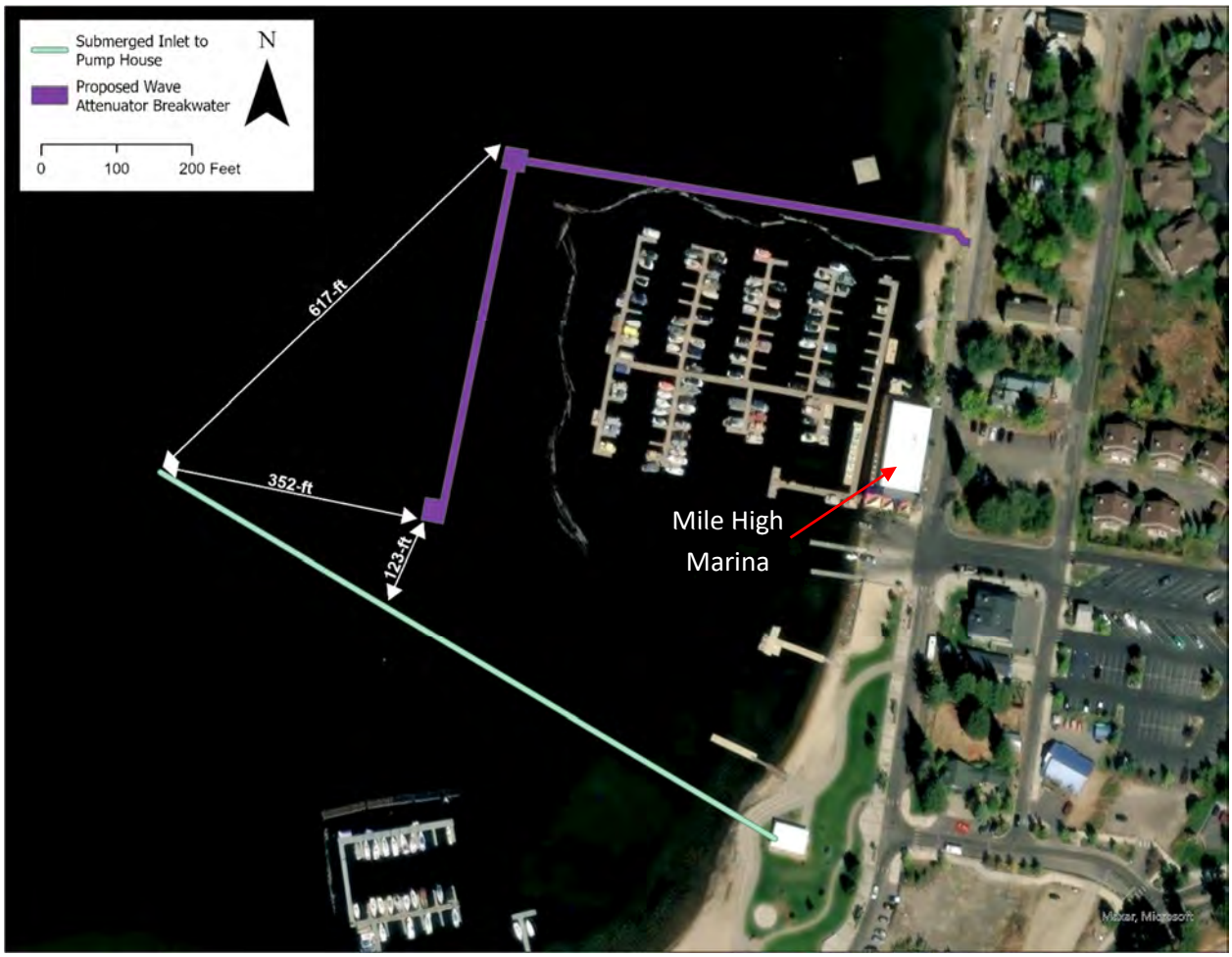


Figure 1. Vicinity Map of the Wave Attenuator Breakwater and Payette Lake Pipe (locations and distances are approximate)

Pollutants—in this case, fine sediments—move through water by three different processes: advection, diffusion, and dispersion. Advection transports sediment at an average rate equal to the average velocity of water. Diffusion and dispersion are processes that spread materials

from highly concentrated areas to less concentrated areas. Diffusion is caused by the random motion of molecules, and dispersion is caused by variations in water velocities over time.

Lake bottoms exhibit little to no movement in terms of velocity. Advection is not likely to occur at the lakebed. Fine sand, clay, and silt particles will be re-suspended as the concrete blocks are placed on the lakebed. However, concentration of fine materials will be low because the concrete blocks are being placed on the surface of the lakebed instead of being keyed into the lakebed. Dispersion and diffusion are anticipated to take place within the vicinity of the disturbance, but the concentrations of the fine materials will be negligible at the pipe inlet due to the distance and low initial concentrations of re-suspended sediment.

The littoral range is the nearshore area of the lake with a downward sloping, shallow shelf where sunlight penetrates the bed and vegetation can survive. The pipe inlet is 550 feet beyond the littoral range according to the original pipe plans for Payette Lake. The littoral range is typically subject to the most visible form of lake motion via wind waves; wind waves have little to no impact outside the littoral zone. Velocities that occur on the lakebed in areas outside of the littoral range of the lake can be affected by upwelling and downwelling, hypolimnetic currents, baroclinic motions, and internal waves. These velocities can range from 1 centimeters per second (cm/s) to tens of cm/s, in which higher velocities can re-suspend sediment. It is not likely that the sediment concentration re-suspended by the placement of the concrete blocks will exceed the sediment concentration re-suspended by natural lake processes at the pipe inlet.

For the evaluation associated with installing the new attenuator system, we considered the risks of potential damage to the intake pipe, intake structure, and supply pipe. The risk of damage is extremely low as the pipe is more than 120 feet away from the nearest concrete anchor, and the intake structure is more than 350 feet away. Both distances offer high confidence that work associated with the installation of the new fixed breakwater system, debris boom, wave attenuation curtain, and boardwalk will have little to no impact to the Village of McCall's raw-water intake or transmission system.

ATTACHMENT 17

From: Jordan Kropf <jordan@kropfindustrial.com>
Sent: Wednesday, December 6, 2023 4:01 AM
To: Sam Worley (sam@worleysb.com) <sam@worleysb.com>
Subject: Floating breakwater materials

Hello Sam,

Please find below some information and comments regarding your questions about the environmental/water quality impacts of the materials used in our floating breakwater system.

Dock Materials

1. Concrete anchors: Concrete anchors are used throughout North America in a wide range of dock anchoring applications, on reservoir lakes, etc.
2. Floatation: The steel pipe floatation does not contain any foam, so there's no risk of plastics/foams escaping even in a catastrophic event.
3. Treated wood: The only wood in the system is installed above the water line, and is treated with a process (Micro Pro Sienna) that's approved for use in playgrounds, etc.
4. Epoxy coating: The Amerlock 2 epoxy is approved for use in potable water systems (see Data Sheet attached)

Dock Maintenance

1. There's nothing involved in the maintenance or servicing of the dock that would introduce chemicals or toxic substances. The winches need to be greased occasionally, but that is done at deck level and none of the grease enters the water. There's nothing on the dock system that requires regular staining/sealing/treating/coating etc.

I hope this information is helpful. If I can provide anything further, please do not hesitate to reach out.

Regards,

Jordan Kropf
Sales Manager
jordan@kropfindustrial.com
T. 888.480.3777 ext. 238
T. 705.378.2453
F. 705.378.5068
www.kropfindustrial.com

March 8, 2024

ATTACHMENT 18

Sam Worley
Mile High Marina
P.O. Box 3090
McCall, ID 83638

RE: Historical impacts of marinas upon the Water Quality of Payette Lake

Sam,

You recently contacted me regarding concerns that the McCall City Council has regarding the potential adverse environmental impact that the proposed 90-slip expansion to the Mile High Marina (*henceforth referred to as the marina*) may have upon the overall water quality of Payette Lake.

The following findings and conclusions presented in this letter are based upon 1) annual Drinking Water Quality Reports (2011 through 2022) provided by the City of McCall Water Treatment Plant (WTP) and 2) conversations with City personnel regarding the creation of the Reports.

After reviewing the above-referenced documents, the following information was obtained:

Historical Drinking Water Quality for the City of McCall, Idaho													
COC	**MCL**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
B	5 ppb	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND
T	1 ppm	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND
E	700 ppm	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND
X	10 ppm	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND
Turbidity	1 NTU	0.45	0.16	0.24	0.24	0.24	NA	0.24	NA	NA Ω	NA Ω	0.038	0.078

COC – Contaminant of Concern
MCL – Maximum Contaminant Level or the maximum concentration allowed in drinking water
B – Benzene, a non-methane volatile organic compound. MCL is 5 parts per billion, ppb.
T – Toluene, a non-methane volatile organic compound. MCL is 1 part per million, ppm.
E – Ethylbenzene, a non-methane volatile organic compound. MCL is 700 ppb.
X – Total (ortho, meta and para) Xylenes; all non-methane volatile organic compounds. MCL is 10 ppm.
Turbidity – MCL is 1 NTU (Nephelometric Turbidity Unit).
ND – Not Detected, where the lab analysis reveals no detectable levels of the COC.
NA – Not Analyzed or Not Available.
NOTES regarding BTEX water-sampling dates: 2019-2022 (no info); 2017-2018 (DEC); 2014-2015 (FEB, MAR for B and T, AUG for E and X); 2013 (AUG); 2011-2012 (MAR).
NOTE regarding Turbidity water-sampling dates: Continuously, at the McCall WTP.
NOTE regarding Turbidity values for years 2011-2022: Average detection values for the sample year.
Ω – 99 percent of yearly sample analyses were below 0.3 NTU.

FINDINGS

After reviewing 11 annual Drinking Water Quality Reports (WQ Reports) and through conversations with City personnel, the following noteworthy facts came to bear:

- A No Wake Zone exists over the Legacy Park intake (City's WTP intake), which is submerged *at least* 70 feet and located *at least* 500 feet from the Mile High Marina. A 2022 wake surfing study determined that the greatest water depth impacted by propeller down-wash is *no greater than* 6.5 feet, when the propeller is set 3 feet below the lake surface (1). A 2022 study regarding the hydrodynamic impacts of recreational watercraft found a *minimal potential* for impact upon silty lake bottoms at water depths exceeding 15 feet (2).
- The BTEX Contaminants of Concern (COCs) are organic liquids known as LNAPLs (Light Non-aqueous Phase Liquids) which have specific gravities less than that (ie, 1.0) of lake water and would therefore predominantly (if not entirely) float upon the lake surface.
- Not all WQ samples and analyses were made at the optimal time (ie, AUG) to best check potential adverse impacts of watercraft pollution upon the Lake. The above table reveals that most sampling events occurred during the off-season.
- All WQ Reports refer to the *post-treatment* analysis of lake water samples. City personnel stated that analyses will henceforth *also* be made *before* treatment at the WTP.
- City personnel revealed that the WTP has been and is currently *not equipped* to treat the BTEX COCs shown in the above table.
- City personnel revealed that they strongly suspect that a significant source of lake water turbidity *may be attributable* to glacial silt, which is most commonly referred to as *rock flour*, which creates the vivid turquoise hues seen in glacier-fed lakes like Lake Louise in Canada. Rock flour consists of *extremely* light and tiny particles of rock-derived silt that stays suspended within the water column *considerably longer* than typical lake-bottom sediments.

  City personnel shared that the equipment that measures Turbidity NTU is being replaced with superior (ie, more sensitive) devices that will provide more accurate results.

CONCLUSIONS

The following conclusions are derived from the findings listed above:

- ✓ Given the relatively significant depth and distance from the City's WTP intake, the findings of two separate and independent studies showing no disturbances within the upper 15 feet of a lake's water column, the existence of an established No Wake Zone within the lake surface over the intake and the fact that BTEX COCs preferentially *float*, it is highly unlikely that BTEX pollution will ever reach the City's WTP intake.
- ✓ Because most BTEX water samples were taken during off-season times, the possibility exists that the WQ Reports are biased in favor of BTEX polluters, since considerably less watercraft activity occurs during the off-season. Future water sample collection / analysis during the peak season should provide a more accurate picture regarding the potential BTEX pollution commonly associated with motorized watercraft.

  One encouraging fact is seen in the AUG (ie, peak season) water analyses for Ethylbenzene (E) and Total Xylenes (X), where Not Detected (ND) levels were nonetheless found.
- ✓ Given that the WTP has not historically treated or currently treats BTEX, the analyses for these *untreated* COCs may be considered as *pre-treatment* analyses. Accordingly, the Not Detected (ND) findings should be considered as representative of the water quality at the City's WTP *intake* regarding BTEX.

- ✓ All WQ Reports revealed Turbidities *well below* the 1 NTU Maximum Contaminant Level (MCL), with *considerably lower* NTU values detected during 2021 and 2022. Given the relatively significant depth and distance of the City's WTP intake to the Mile High Marina; findings from two separate and independent studies showing no disturbances within the upper 6.5 to 15 feet of the lake's water column and the existence of an established No Wake Zone over the intake, it is *extremely unlikely* that full-speed (let alone idling) watercraft will contribute anything to the naturally occurring turbidity at the lake bottom or by the intake. Given that some (or most) of the lake water turbidity *may* be attributable to natural "rock flour" conditions, the possibility exists that the City's *future* Turbidity MCL may become *less stringent* regarding this COC.

Given the Findings and Conclusions addressed in this letter, it is *highly unlikely* that the proposed 90-slip expansion for the Mile High Marina will significantly pollute Payette Lake bottom water with BTEX COCs and it is even *more unlikely* that (idling or even full-speed) watercraft will contribute *any* additional turbidity to the lake bottom water surrounding the City's WTP intake.

Please call me if you have any questions whatsoever.

Sincerely,

Brett D. Smith PE, LG
Professional Engineer / Licensed Geologist
(LG registration in WA)
(PE registrations in ID, NV, OR and WA)

REFERENCES CITED

1. Endicott, Fay M., et al: *Numerical Study of the Impact of Wake Surfing on Inland Bodies of Water,* Journal of Water Resource and Protection, 14, 238-272, 2022.
2. Valley County and the City of McCall, Idaho: *A Sustainable and Adaptable Plan Preserving What We Love*, Valley County Waterways Management Plan, 2022.

ATTACHMENT 19

WATER, CIVIL, AND ENVIRONMENTAL INC.

To:	Sam Worley	Project:	Marina Greenhouse Gas Calculations
Prepared By:	Ryan A. Eldridge, P.E.	Cc:	File
Date:	March 8, 2024	Task:	
Subject:	Greenhouse Gas Calculations – Mile High Marina Expansion		

1.0 INTRODUCTION

Water, Civil, and Environmental Inc. (WCE Inc.) has prepared the following technical memorandum presenting greenhouse gas (GHG) calculations for the fuel sold at the Mile High Marina fueling station and estimated emissions from new boats that will be using Payette Lake due to the proposed expansion of the Mile High Marina (Marina).

2.0 BACKGROUND

On February 14, 2024, Mile High Marina received a request for additional information on Conditional Use Permit Application CUP-23-07 from the McCall City Planner. This technical memorandum addresses GHG gas emissions from the proposed expansion. Specifically, the following was requested:

> *"Provide a greenhouse gas emissions inventory of the proposed expansion utilizing the methodology established in the Corporate Accounting and Reporting Standard, Revised Edition".*

The Corporate Accounting and Reporting Standard, Revised Edition (CARS) provides guidance on identifying and calculating GHG emissions, reporting, and other items involved with the GHG Protocol Initiative. For this technical memorandum, WCE Inc. focused on identifying and calculating GHG emissions for the existing Marina and the proposed expansion.

Currently, the Marina consists of 170 slips for watercraft and the Owner is proposing to add another 90 slips. Additionally, the Marina is the only fueling station located on Payette Lake that allows recreational watercraft to refuel without having to remove their watercraft from the water. This means that a large percentage of property owners around Payette Lake with slips and other marinas such as Lake Shore Marina use the fueling station and fuel delivery records can provide an estimate of GHG emissions for the annual watercraft use on Payette Lake.

3.0 GREENHOUSE GAS ESTIMATING PROCESS

CARS recommends the following steps to identify and calculate GHG Emissions:

- Identify Sources
- Select Calculation Approach
- Collect Data and Choose Emissions Factors
- Apply Calculation Tools

The following subsections describe how each step was completed.

3.1 Identify Sources

As described above the fueling station provides fuel to the general public which includes the lessees of slips at the Marina. For the purpose of this memorandum only non-road sources for GHG emissions will be considered. On-road sources were not considered for this calculation since the fueling station only sells fuel to watercraft that have been launched and are on the water.

As described above WCE Inc. will use information from the annual fuel deliveries to the Marina as well as results of surveyed existing slip lessees and watercraft users on the waiting list for the proposed new slips to develop an estimate of GHG emissions from watercraft that are not currently operating on Payette Lake. The survey is described below, and additional survey information was submitted to the commissioners under a separate cover.

3.2 Select Calculation Approach

WCE Inc. used the United States Environmental Protection Agency's (US EPA's) "Simplified GHG Emissions Calculator, 2023", for calculation of GHG emissions for the proposed expansion. The spreadsheet follows the guidance for CARS and provides industry accepted GHG emission values.

3.3 Collect Data and Choose Emissions Factors

WCE Inc. obtained information on existing slip watercraft types, number of watercraft, as well as the total amount of fuel delivered to the Mile High Marina full-service fueling station for the 2021 through 2023 seasons. Table 1 provides a breakdown of the number of watercraft and engine sizes that are leasing existing slips as well as a breakdown of the types of watercraft on the waiting list for the proposed slips. Tables 2, 3, and 4 show the number of deliveries, and quantity of fuel delivered to Marina fueling station for the past three years.

Again, it should be noted that the total fuel delivered to the Marina provides an estimate for all use of watercraft on Payette Lake not just the existing slips at the Marina.

3.3.1 Annual Fuel Deliveries to Mile High Marina

The fueling station at the Marina sells fuel to the general public which includes the Marina, Lake Shore Marina users, private property owners around Payette Lake, and operators who trailer in their watercraft. On average approximately 98,000 gallons of gasoline were delivered to the fueling station over the past 3 years with the highest amount being 108,308 gallons in 2021 and the lowest amount being 91,611 gallons in 2023. The amount of fuel delivered to the fueling station has decreased each of the last two years from the high in 2021 (Table 5).

3.3.2 Estimate of Annual Hours of Watercraft Usage

Recently the Marina surveyed existing customers and requested the following information:

- Boat Year
- Boat Type
- If the customer owned a residence in McCall
- If the customer walks to the Marina
- Normal put-in and take-out days for their watercraft.
- Number of days they used their watercraft on Payette Lake.
- Estimated hours of each day of use

Additionally, the Marina Owner surveyed potential customers who were on the waiting list for either existing boat slips or new boat slips. Of particular note of the 90 people surveyed who were on the waiting

list 82 of them already owned a personal watercraft that they were using on Payette Lake. Seven of the eight people who did not own a boat currently either rented or borrowed a boat for use on Payette Lake, and only one respondent was new to the area and did not already participate in the use of watercraft on Payette Lake. To determine the increase in GHG emissions WCE Inc. estimated that a total of 8 new watercraft would be put into use due to the proposed Marina expansion.

The survey of existing watercraft indicates that the average hours of use for each boat with existing slips at the Marina is approximately 111.5 hours per year. To determine the approximate annual usage of the additional 8 watercraft that will be put into use WCE Inc. used a conservative value of 120 hours per year which is approximately 7 percent higher than the annual average use for the existing slips. The estimated annual usage for the additional 8 watercraft is 960 hours.

The 960 hours for the 8 waiting list lessees who are planning to purchase watercraft represent the increase in GHG emissions from the proposed expansion of the Marina since all of the other watercrafts are already using Payette Lake and their usage would be accounted for in the annual fuel sold from the Marina.

3.3.2 Estimated Fuel Consumption of Watercraft at the Marina

In order to develop an estimate for the fuel used by the additional 8 watercraft WCE Inc. used information from the Federal Highway Administration which estimates that between 0.88 to 2.31 gallons per hour (GPH) is used by gasoline-powered watercraft (FHWA 2015, Table 5-2). The lower end of the estimated range represents sail boats, and the upper end of the estimated range represents personal watercraft. Powerboats are shown as using approximately 2.1 GPH. In order to develop a conservative estimate of GHG emissions by the additional 8 watercraft WCE Inc. chose to use 3 GPH.

3.4 Basis of Greenhouse Gas Calculations

For the calculation of GHG emissions from existing watercraft on Payette Lake, WCE Inc. used the approximate annual fuel delivered to the Marina (98,000 gallons). As discussed above this value provides an estimate of GHG emissions for a significant portion of watercraft using Payette Lake and also covers the emissions from the use of 170 existing slips and 82 of the proposed slips at the Marina.

To calculate the emissions from the 8 new watercraft that will be put into service from the proposed expansion WCE Inc. multiplied the total average annual hours of use for watercraft at the existing Marina (120 hours x 8 watercraft) and multiplied that by the estimated rate of fuel consumption (3 GPH). The total estimated fuel consumption for the additional 8 watercraft is 2,880 gallons per year.

3.3 Apply Calculation Tools

As described in Section 3.2 WCE Inc. used the US EPA's "Simplified GHG Emissions Calculator, 2023" to prepare the GHG emissions estimates for the Marina. WCE Inc. prepared calculations based on the following categories:

- The average annual fuel sold at the Marina fueling station represents the existing use of a majority of watercraft on Payette Lake.
- The watercraft represented by the 8 survey respondents who do not currently own watercraft but plan to buy watercraft once the slips are available.

4.0 RESULTS

The total GHG emissions from the annual average fuel sold at Mile High Marina is 911 metric tons of CO_2 equivalent emissions. This value accounts for GHG emissions from all users on Payette Lake who purchase fuel from the Marina not just Mile High Marina slip lessees. According to a recent count of slips on Payette

Lake conducted by Milleman Pemberton and Holm, LLP there are currently over 1,000 slips on Payette Lake.

The emissions from the 8 watercraft that would be purchased and put into use on Payette Lake once the proposed expansion is complete are equal to approximately 27 metric tons. This value represents the increase in GHG emissions from the proposed expansion of the Marina. Results from the calculations are presented in Table 6. Calculation input and summary sheets are presented in Appendix 1.

5.0 CONCLUSIONS

The estimated total GHG emissions from the average amount of fuel delivered to the Marina is 911 metric tons per year. The fuel station is open to the public and is used by a majority of boaters that moor their boats on Payette Lake including private property owners, Marina users, Lake Shore Marina users, as well as all other day-use watercraft traffic on Payette Lake.

Additionally, as described in the survey results over 90 percent of the watercraft users on the waiting list for the proposed 90 slips already own and operate a watercraft on Payette Lake. Only 8 of the proposed users intend to buy a watercraft that do not currently operate on Payette Lake. These additional 8 watercraft would represent the increase in GHG emissions from the proposed expansion.

The 27 metric tons of GHG emissions from the proposed new watercraft is less than a 3 percent increase in emissions. Also, it should be noted that the average usage of 3 GPH is an approximately 30 percent increase in average fuel consumption over industry standards (FHWA 2015). This indicates that the value is very conservative and most likely contains a significant safety factor.

For comparison, the US EPA estimates that the average on-road passenger vehicle in the United States emits approximately 4.6 metric tons of CO_2 per year (US EPA Website 2024). Using this average value the GHG emissions for the new watercraft that are not currently operating on Payette Lake are equal to the use of approximately 7 additional on-road vehicles for one year.

6.0 REFERENCES

United States Environmental Protection Agency
2023 Simplified GHG Emissions Calculator
https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator (Accessed 3/7/2024)

United States Environmental Protection Agency
2024 Greenhouse Gas Emissions from a Typical Passenger Vehicle (Website)
https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle (Accessed 3/7/2024)

United States Federal Highway Administration
2015 Off-Highway And Public-Use Gasoline Consumption Estimation Models Used In The Federal Highway Administration
Publication Number – FHWA-PL-17-012

World Resources Institute and World Business Council for Sustainable Development
2004 The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf (Accessed 3/7/2024)

Tables

Table 1

Watercraft Type and Quantities
Mile High Marina

Existing Slips		
Watercraft Type	**Quantity**	**Engine Horsepower**
Cabin Cruiser	2	200
Deck Boat	1	150
Fishing Boat	1	200
Jet Boat	1	300
Pontoon Boat	50	200
Runabout Boats	32	150
Sail Boat	3	75
Ski Boat	10	150
Surf Boat	63	400
Total	**163**	

Proposed Slips with Owners Currently Operating on Payette Lake		
Pontoon Boat	17	200
Runabout Boat	35	150
Surf Boat	21	400
Aluminum Fishing Boat	9	200
Total	**82**	

Proposed New Slips (New Boat Owners Not Operating a Boat on Payette Lake)		
Pontoon Boat	6	200
Runabout Boat	2	150
Total	**8**	

Table 2
Fuel Delivered to Mile High Marina (2021)

Mile High Marina
3/8/2024

Customer Name	Product code	Product Name	Qty	Date
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	5,000	5/25/2021
MILE HIGH MARINA	0537NNNN	NO LEAD ALL TAXES	5,000	5/25/2021
MILE HIGH MARINA	0537NNNN	NO LEAD ALL TAXES	(5,000)	5/25/2021
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,301	5/25/2021
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,301	5/25/2021
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	(6,301)	5/25/2021
MILE HIGH MARINA	0537NNNN	NO LEAD ALL TAXES	5,001	6/25/2021
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,005	6/25/2021
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	2,799	7/3/2021
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,301	7/3/2021
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	4,999	7/8/2021
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,300	7/8/2021
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	2,799	7/14/2021
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	4,700	7/14/2021
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	1,600	7/15/2021
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	4,998	7/20/2021
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,301	7/20/2021
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	5,000	7/28/2021
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,304	7/28/2021
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	2,799	8/3/2021
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,301	8/3/2021
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	2,800	8/10/2021
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,301	8/10/2021
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	2,799	8/18/2021
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,300	8/18/2021
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	2,800	9/3/2021
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	3,800	9/3/2021
ITEMS --> CUSTOMER NUMBER 50578				
			108,308	
***GRAND TOTALS: 27 ITEMS				
			108,308	

Table 3
Fuel Delivered to Mile High Marina (2022)

Mile High Marina
3/8/2024

Customer Name	Product code	Product Name	Qty	Date
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	4,700	5/24/2022
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	3,802	5/24/2022
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	2,800	7/1/2022
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	4,700	7/1/2022
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	3,799	7/8/2022
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	7,501	7/8/2022
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	4,998	7/14/2022
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,001	7/14/2022
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	5,000	7/23/2022
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	4,700	7/23/2022
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	2,801	7/28/2022
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,100	7/28/2022
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	4,397	8/4/2022
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,800	8/4/2022
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	4,408	8/11/2022
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,804	8/11/2022
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	2,804	8/17/2022
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,900	8/17/2022
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	1,700	8/24/2022
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	2,998	9/8/2022
***** 20 ITEMS --> CUSTOMER NUMBER 50578				
			93,713	
*****GRAND TOTALS: 20 ITEMS				
			93,713	

Table 4
Fuel Delivered to Mile High Marina (2023)

Mile High Marina
3/8/2024

Account	Code	Product	Qty	Date Delivered
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	4,999	05/23/2023
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	5,001	05/23/2023
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	1,999	06/28/2023
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	5,499	06/28/23
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,001	07/03/2023
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	2,976	07/03/23
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	7,000	07/07/2023
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	2,000	07/07/23
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	3,000	07/14/2023
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,001	07/14/2023
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	3,000	07/21/2023
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	7,499	07/21/23
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,901	07/28/2023
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	976	07/28/23
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	4,951	08/04/2023
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,301	08/04/23
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	3,499	08/13/2023
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,004	08/13/2023
MILE HIGH MARINA	0237NNNN	NO LEAD MIDGRADE ALL TAXES	2,001	08/25/2023
MILE HIGH MARINA	0637NNNN	PREMIUM, ALL TAXES	6,003	08/25/2023
***** 20 ITEMS --> CUSTOMER NUMBER 50578				
			91,611	
*****GRAND TOTALS: 20 ITEMS				
			91,611	

Table 5

Average Fuel Delivered to Marina
Mile High Marina

Year	Total Fuel Delivered (Gal)
2021	108,308
2022	93,713
2023	91,611
Total	**293,632**
Average	**97,877**

Table 6

Greenhouse Gas Emissions
Mile High Marina

Slip Type/Watercraft Status	Total Annual GHG Emission CO_2 Equivalent (Metric Tons)
Fuel Sold at Mile High Marina	911
Increase in Emissions from Proposed Expansion*	27
Total Annual Emissions after Expansion	**938**

*Increase is based on the reported 8 additional watercraft that would be put into service on Payette Lake after the proposed marina expansion

Appendix 1
GHG Calculator Input and Summary Sheets

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EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Scope 1 Emissions from Mobile Sources

Guidance

(A) Enter annual data for each vehicle or group of vehicles (grouped by vehicle type, vehicle year, and fuel type) in ORANGE cells in **Table 1**. Example entry is shown in first row (GREEN *Italics*). Only enter vehicles owned or leased by your organization on this sheet. All other vehicle use such as employee commuting or business travel is considered a scope 3 emissions source and should be reported in the corresponding scope 3 sheets.

- *Note: As of the v9 Simplified GHG Calculation tool update, the latest mobile combustion factors reflect year 2020 data. Therefore, for all vehicle model years 2021 onward, the 2020 year factor is used.*
- Select "On-Road" or "Non-Road" from drop down box to determine the Vehicle Types available. **Must make this selection before picking vehicle type.**
- Select "Vehicle Type" from drop down box (closest type available).
- Enter "Fuel Usage" in appropriate units (units appear when vehicle type is selected).
  - If mileage or fuel usage is unknown, estimate using approximate fuel economy values (see **Reference Table** below).
  - Vehicle year and Miles traveled are not necessary for non-road equiment.

(B) When using biofuels, typically the biofuel (biodiesel or ethanol) is mixed with a petroleum fuel (diesel or gasoline) for use in vehicles. Enter the biodiesel and ethanol percentages of the fuel if known, or leave default values.

Biodiesel Percent:	20	%
Ethanol Percent:	80	%

(C) Biomass CO_2 emissions from biodiesel and ethanol are not reported in the total emissions, but are reported separately at the bottom of the sheet.

Table 1. Mobile Source Fuel Combustion and Miles Traveled

Source ID	Source Description	On-Road or Non-Road?	Vehicle Type	Vehicle Year	Fuel Usage	Units	Miles Traveled
Fleet-012	*HQ Fleet*	*OnRoad*	*Passenger Cars - Gasoline*	*2019*	*500*	*gal*	*12,650*
Existing Usage on Payette Lake		NonRoad	Recreational Equipment - Gasoline (4 stroke)	2019	98,000	gal	

GHG Emissions

Total Organization-Wide Mobile Source Fuel Usage and CO_2 Emissions (On-Road and Off-Road Vehicles)

Fuel Type	Fuel Usage	Units	CO_2 (kg)	
Motor Gasoline	98,000	gallons	860,440.0	
Diesel Fuel	0	gallons	0.0	
Residual Fuel Oil	0	gallons	0.0	
Aviation Gasoline	0	gallons	0.0	
Kerosene-Type Jet Fuel	0	gallons	0.0	
Liquefied Petroleum Gas (LPG)	0	gallons	0.0	
Ethanol	0	gallons	0.0	*Note: emissions here are o*
Biodiesel	0	gallons	0.0	*Note: emissions here are o*
Liquefied Natural Gas (LNG)	0	gallons	0.0	
Compressed Natural Gas (CNG)	0	scf	0.0	

Total Organization-Wide Non-Road Mobile Source Fuel Usage and CH_4/N_2O Emissions

Vehicle Type	Fuel Type	Fuel Usage (gallons)	CH_4 (g)	N_2O (g)
Ships and Boats	Residual Fuel Oil	-	-	-
	Gasoline (2 stroke)	-	-	-
	Gasoline (4 stroke)	-	-	-
	Diesel	-	-	-
Locomotives	Diesel	-	-	-
Aircraft	Jet Fuel	-	-	-
	Aviation Gasoline	-	-	-
Agricultural Equipment	Gasoline (2 stroke)	-	-	-
	Gasoline (4 stroke)	-	-	-
	Gasoline Off-Road Trucks	-	-	-
	Diesel Equipment	-	-	-
	Diesel Off-Road Trucks	-	-	-
	LPG	-	-	-
Construction/Mining Equipment	Gasoline (2 stroke)	-	-	-
	Gasoline (4 stroke)	-	-	-
	Gasoline Off-Road Trucks	-	-	-
	Diesel Equipment	-	-	-
	Diesel Off-Road Trucks	-	-	-
	LPG	-	-	-
Lawn and Garden Equipment	Gasoline (2 stroke)	-	-	-
	Gasoline (4 stroke)	-	-	-
	Diesel	-	-	-
	LPG	-	-	-
Airport Equipment	Gasoline	-	-	-
	Diesel	-	-	-
	LPG	-	-	-
Industrial/Commercial Equipment	Gasoline (2 stroke)	-	-	-
	Gasoline (4 stroke)	-	-	-
	Diesel	-	-	-
	LPG	-	-	-
Logging Equipment	Gasoline (2 stroke)	-	-	-
	Gasoline (4 stroke)	-	-	-
	Diesel	-	-	-
Railroad Equipment	Gasoline	-	-	-
	Diesel	-	-	-
	LPG	-	-	-
Recreational Equipment	Gasoline (2 stroke)	-	-	-
	Gasoline (4 stroke)	98,000	281,260	147,000
	Diesel	-	-	-
	LPG	-	-	-

Total CO_2 Equivalent Emissions (metric tons) - Mobile Sources	**911.3**
Total Biomass CO_2 Equivalent Emissions (metric tons) - Mobile Sources	**0.0**

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U.S. Environmental Protection Agency

Emissions Summary

Guidance

The total GHG emissions from each source category are provided below. You may also use this summary sheet to fill out the *Annual GHG Inventory Summary and Goal Tracking Form* (.xls) as this calculator only quantifies one year of emissions at a time.

https://www.epa.gov/climateleadership/target-setting

By entering the data below into the appropriate cell of the *Annual GHG Inventory Summary and Goal Tracking Form,* you will be able to compare multiple years of data.

If you have multiple Calculator files covering sub-sets of your inventory for a particular reporting period, sum each of the emission categories (e.g. Stationary Combustion) to an organizational total, which then can be entered into the *Annual GHG Inventory Summary and Goal Tracking Form* .

(A) Enter organization information into the orange cells. Other cells on this sheet will be automatically calculated from the data entered in the sheets in this workbook. Blue cells indicate required emission sources if applicable. Green cells indicate scope 3 emission sources and offsets, which organizations may optionally include in its inventory.

(B) The "Go To Sheet" buttons can be used to navigate to the data entry sheets.

Organizational Information:

Organization Name:	Mile High Marina
Organization Address:	1300 East Lake Street McCall, Idaho
Inventory Reporting Period:	*Annual GHG Estimate for Fuel Sold at Marina* Start: *MM/DD/YY* End: *MM/DD/YY*
Name of Preparer:	Ryan Eldridge
Phone Number of Preparer:	208.319.9744
Date Prepared:	7-Mar-23

Summary of Organization's Emissions:

Scope 1 Emissions

Go To Sheet	Stationary Combustion	0	CO_2-e (metric tons)
Go To Sheet	Mobile Sources	911	CO_2-e (metric tons)
Go To Sheet	Refrigeration / AC Equipment Use	0	CO_2-e (metric tons)
Go To Sheet	Fire Suppression	0	CO_2-e (metric tons)
Go To Sheet	Purchased Gases	0	CO_2-e (metric tons)

Location-Based Scope 2 Emissions

Go To Sheet	Purchased and Consumed Electricity	0	CO_2-e (metric tons)
Go To Sheet	Purchased and Consumed Steam	0	CO_2-e (metric tons)

Market-Based Scope 2 Emissions

Go To Sheet	Purchased and Consumed Electricity	0	CO_2-e (metric tons)
Go To Sheet	Purchased and Consumed Steam	0	CO_2-e (metric tons)

Total organization Emissions

Total Scope 1 & Location-Based Scope 2	911	CO_2-e (metric tons)
Total Scope 1 & Market-Based Scope 2	911	CO_2-e (metric tons)

Reductions

Go To Sheet	Offsets	0	CO_2-e (metric tons)

Net Scope 1 and 2 Location-Based Emissions	911	CO_2-e (metric tons)
Net Scope 1 and 2 Market-Based Emissions	911	CO_2-e (metric tons)

Scope 3 Emissions

Go To Sheet	Employee Business Travel	0	CO_2-e (metric tons)
Go To Sheet	Employee Commuting	0	CO_2-e (metric tons)
Go To Sheet	Upstream Transportation and Distribution	0	CO_2-e (metric tons)
Go To Sheet	Waste	0	CO_2-e (metric tons)

Required Supplemental Information

Go To Sheet	Biomass CO_2 Emissions from Stationary Sources	0	CO_2-e (metric tons)
Go To Sheet	Biomass CO_2 Emissions from Mobile Sources	0	CO_2-e (metric tons)

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EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Scope 1 Emissions from Mobile Sources

Guidance

(A) Enter annual data for each vehicle or group of vehicles (grouped by vehicle type, vehicle year, and fuel type) in ORANGE cells in **Table 1**. Example entry is shown in first row (GREEN *Italics*). Only enter vehicles owned or leased by your organization on this sheet. All other vehicle use such as employee commuting or business travel is considered a scope 3 emissions source and should be reported in the corresponding scope 3 sheets.

- *Note: As of the v9 Simplified GHG Calculation tool update, the latest mobile combustion factors reflect year 2020 data. Therefore, for all vehicle model years 2021 onward, the 2020 year factor is used.*
- Select "On-Road" or "Non-Road" from drop down box to determine the Vehicle Types available. **Must make this selection before picking vehicle type.**
- Select "Vehicle Type" from drop down box (closest type available).
- Enter "Fuel Usage" in appropriate units (units appear when vehicle type is selected).
- If mileage or fuel usage is unknown, estimate using approximate fuel economy values (see **Reference Table** below).
- Vehicle year and Miles traveled are not necessary for non-road equiment.

(B) When using biofuels, typically the biofuel (biodiesel or ethanol) is mixed with a petroleum fuel (diesel or gasoline) for use in vehicles. Enter the biodiesel and ethanol percentages of the fuel if known, or leave default values.

Biodiesel Percent:	20	%
Ethanol Percent:	80	%

(C) Biomass CO_2 emissions from biodiesel and ethanol are not reported in the total emissions, but are reported separately at the bottom of the sheet.

Table 1. Mobile Source Fuel Combustion and Miles Traveled

Source ID	Source Description	On-Road or Non-Road?	Vehicle Type	Vehicle Year	Fuel Usage	Units	Miles Traveled
Fleet-012	*HQ Fleet*	*OnRoad*	*Passenger Cars - Gasoline*	*2019*	*500*	*gal*	*12,650*
New Slips Not Currently Operating	(8) Slips not currently opera	NonRoad	Recreational Equipment - Gasoline (4 stroke)	2019	2,880	gal	

GHG Emissions

Total Organization-Wide Non-Road Mobile Source Fuel Usage and CH_4/N_2O Emissions

Vehicle Type	Fuel Type	Fuel Usage (gallons)	CH_4 (g)	N_2O (g)
Ships and Boats	Residual Fuel Oil	-	-	-
	Gasoline (2 stroke)	-	-	-
	Gasoline (4 stroke)	-	-	-
	Diesel	-	-	-
Locomotives	Diesel	-	-	-
Aircraft	Jet Fuel	-	-	-
	Aviation Gasoline	-	-	-
Agricultural Equipment	Gasoline (2 stroke)	-	-	-
	Gasoline (4 stroke)	-	-	-
	Gasoline Off-Road Trucks	-	-	-
	Diesel Equipment	-	-	-
	Diesel Off-Road Trucks	-	-	-
	LPG	-	-	-
Construction/Mining Equipment	Gasoline (2 stroke)	-	-	-
	Gasoline (4 stroke)	-	-	-
	Gasoline Off-Road Trucks	-	-	-
	Diesel Equipment	-	-	-
	Diesel Off-Road Trucks	-	-	-
	LPG	-	-	-
Lawn and Garden Equipment	Gasoline (2 stroke)	-	-	-
	Gasoline (4 stroke)	-	-	-
	Diesel	-	-	-
	LPG	-	-	-
Airport Equipment	Gasoline	-	-	-
	Diesel	-	-	-
	LPG	-	-	-
Industrial/Commercial Equipment	Gasoline (2 stroke)	-	-	-
	Gasoline (4 stroke)	-	-	-
	Diesel	-	-	-
	LPG	-	-	-
Logging Equipment	Gasoline (2 stroke)	-	-	-
	Gasoline (4 stroke)	-	-	-
	Diesel	-	-	-
Railroad Equipment	Gasoline	-	-	-
	Diesel	-	-	-
	LPG	-	-	-
Recreational Equipment	Gasoline (2 stroke)	-	-	-
	Gasoline (4 stroke)	2,880	8,266	4,320
	Diesel	-	-	-
	LPG	-	-	-

Total CO_2 Equivalent Emissions (metric tons) - Mobile Sources	**26.8**
Total Biomass CO_2 Equivalent Emissions (metric tons) - Mobile Sources	**0.0**

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EPA CENTER FOR CORPORATE CLIMATE LEADERSHIP
U.S. Environmental Protection Agency

Emissions Summary

Guidance

The total GHG emissions from each source category are provided below. You may also use this summary sheet to fill out the *Annual GHG Inventory Summary and Goal Tracking Form* (.xls) as this calculator only quantifies one year of emissions at a time.

https://www.epa.gov/climateleadership/target-setting

By entering the data below into the appropriate cell of the *Annual GHG Inventory Summary and Goal Tracking Form,* you will be able to compare multiple years of data.

If you have multiple Calculator files covering sub-sets of your inventory for a particular reporting period, sum each of the emission categories (e.g. Stationary Combustion) to an organizational total, which then can be entered into the *Annual GHG Inventory Summary and Goal Tracking Form* .

(A) Enter organization information into the orange cells. Other cells on this sheet will be automatically calculated from the data entered in the sheets in this workbook. Blue cells indicate required emission sources if applicable. Green cells indicate scope 3 emission sources and offsets, which organizations may optionally include in its inventory.

(B) The "Go To Sheet" buttons can be used to navigate to the data entry sheets.

Organizational Information:

Organization Name:	Mile High Marina
Organization Address:	1300 East Lake Street McCall, Idaho
Inventory Reporting Period:	*New to Operating on Payette Lake - Proposed (8 Boats)*
Start:	*MM/DD/YY*
End:	*MM/DD/YY*
Name of Preparer:	Ryan Eldridge
Phone Number of Preparer:	208.319.9744
Date Prepared:	44992

Summary of Organization's Emissions:

Scope 1 Emissions

Go To Sheet	Stationary Combustion	0	CO_2-e (metric tons)
Go To Sheet	Mobile Sources	27	CO_2-e (metric tons)
Go To Sheet	Refrigeration / AC Equipment Use	0	CO_2-e (metric tons)
Go To Sheet	Fire Suppression	0	CO_2-e (metric tons)
Go To Sheet	Purchased Gases	0	CO_2-e (metric tons)

Location-Based Scope 2 Emissions

Go To Sheet	Purchased and Consumed Electricity	0	CO_2-e (metric tons)
Go To Sheet	Purchased and Consumed Steam	0	CO_2-e (metric tons)

Market-Based Scope 2 Emissions

Go To Sheet	Purchased and Consumed Electricity	0	CO_2-e (metric tons)
Go To Sheet	Purchased and Consumed Steam	0	CO_2-e (metric tons)

Total organization Emissions

Total Scope 1 & Location-Based Scope 2	27	CO_2-e (metric tons)
Total Scope 1 & Market-Based Scope 2	27	CO_2-e (metric tons)

Reductions

Go To Sheet	Offsets	0	CO_2-e (metric tons)

Net Scope 1 and 2 Location-Based Emissions	27	CO_2-e (metric tons)
Net Scope 1 and 2 Market-Based Emissions	27	CO_2-e (metric tons)

Scope 3 Emissions

Go To Sheet	Employee Business Travel	0	CO_2-e (metric tons)
Go To Sheet	Employee Commuting	0	CO_2-e (metric tons)
Go To Sheet	Upstream Transportation and Distribution	0	CO_2-e (metric tons)
Go To Sheet	Waste	0	CO_2-e (metric tons)

Required Supplemental Information

Go To Sheet	Biomass CO_2 Emissions from Stationary Sources	0	CO_2-e (metric tons)
Go To Sheet	Biomass CO_2 Emissions from Mobile Sources	0	CO_2-e (metric tons)

Calculation of GHG
Mile High Marina

ATTACHMENT 20

Total US				Footnote	Total Idaho	Footnote	Total MHM	
13,000,000	Total number of registered recreational boats in US			1	87,840 registered boats	2	260	includes 90 additional slips
	Total US Recreational Marine Industry							
					0.68%		0.002%	% of boats to total US
							0.296%	% of boats in Idaho
	Macro to Micro Analysis							
4,941,000,000	Metric tons of CO2 US Annually (2022)			100%	3			
1,383,480,000	US Transportation Industry			28%	4	(of the US total emissions)		
41,504,400	Total US Maritime Industry			3%	5	(of the US transportation industry)		
9,684,360	Total US Recreational Marine Industry			0.7%	6	(of the US transportation industry)		
65,854	Idaho Rec Marine	87,840	Boats	0.68%		(of the Idaho rec marine industry)		
195	Mile High Marina	260	Boats	0.296%				
	Metric tons to Lbs conversion							
428,828 lbs	Mile High Marina	260	Boats		7	at conversion rate of 19.5 lbs equals	21,991	gals
1,649 lbs	Mile High Marina	1	Boat			at conversion rate of 19.5 lbs equals	85	gals
13,195 lbs	Mile High Marina	8	Boats			at conversion rate of 19.5 lbs equals	677	gals
280,330 lbs	Mile High Marina	170	Boats			at conversion rate of 19.5 lbs equals	14,376	gals

* metric ton equals 2200 lbs

Footnotes:

1 https://www.siyachts.com/which-us-state-has-the-most-boats

2 https://www.statista.com/statistics/1155988/us-recreational-boating-vessels/

3 https://www.statista.com/statistics/183943/us-carbon-dioxide-emissions-from-1999/

4 https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions

5 https://www.energy.gov/sites/default/files/2023-01/the-us-national-blueprint-for-transportation-decarbonization.pd

6 https://cfpub.epa.gov/ghgdata/inventoryexplorer/#allsectors/allsectors/allgas/econsect/al

7 https://8billiontrees.com/carbon-offsets-credits/carbon-ecological-footprint-calculators/boat-calculator/

ATTACHMENT 21

MARINA GREEN PRACTICES-MILE HIGH MARINA

The following are practices derived from a variety of sources which the Mile High Marina either already has or intends to implement:

Establish Recycling as a Norm

Placing recycle bins in the vicinity and installing text/graphic directions for use may convince boaters to take more eco-friendly measures.

- Purchase marina products in bulk to minimize packaging
- Request that on-site restaurants use recyclable carryout containers
- Recycle batteries
- No self-serve fueling. Require marina staff to fill each vessel.
- Recycle cardboard

Digitize Your Operations

Going paperless is time and cost-efficient. Automate fueling, accounting, billing, and other day-to-day operations

Promote Green Shipping Practices

Use eco-friendly boat cleaning products
Use biodegradable oil absorbents
Use low-emissions boats (built after 2010)

Educate Boaters & Staff on Boat & Engine Maintenance

Education is key when it comes to environmentalism

- Boat owners should have their engines fine-tuned at least once a year by a qualified mechanic; oil leaks should be detected; and fuel lines should be inspected on a regular basis.
- Recommend biodegradable, less toxic propylene glycol (PG) antifreeze instead of traditional ethylene-glycol (EG) antifreeze.
- Promote the use of natural cleaning products on vessels, such as baking soda, lemon juice, white vinegar and borax.
- Guests who bring pets to the marina must clean up after them. Pet waste can wash into the basin and add pollutants to the water.

Marina Must-Haves and Must-Dos

- Have trash bags available to boaters to ensure they can dispose of their on-board trash and bring it back to the marina for trash pickup.
- Have plentiful trash bins around the marina with signs urging marina patrons to dispose of trash on-shore.
- Provide doggy waste bags and receptacles to make it easier for guests to clean up after their pets.
- Make sure fuel nozzles are hung vertically to avoid dripping and that no one empties excess fuel in hose on the ground or in water.
- Report oil spills or hazardous waste concerns (including sewage) immediately as instructed in Spill Prevention Plan.
- Replace all incandescent lighting throughout the marina with more efficient LED lighting.
- Encourage vessel owners to use the marina's on-shore restrooms and have restrooms regularly cleaned using eco-friendly soaps and cleaners.
- Advise vessel owners to rinse boats off with fresh water after coming to shore. Waxing the boat each year can also prevent buildup on the vessel's surface.
- Sell environmentally friendly cleaning products
- Whenever reasonably possible, Marina on-site restaurant to purchase locally sourced food for menu items.

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2016 Centurion Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Mid June
Typically, when do you remove your boat from the Lake at the end of the season?	1st of October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	6
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2008 Ranker Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Mid June
Typically, when do you remove your boat from the Lake at the end of the season?	Late September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	4
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2015 Centurion Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	2nd week in June
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	50
On days of use, typically how many hours did you spend out on the Lake?	5 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2023 Four Winns Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	35
On days of use, typically how many hours did you spend out on the Lake?	5 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2019 Bennington Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	4th of July
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2014 Supreme Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Early June
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2007 Centurion Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	10
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2015 G3 Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	30
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2012 MB Tomcat Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	June 15th
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	36
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2015 Malibu Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Mid June
Typically, when do you remove your boat from the Lake at the end of the season?	Late September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	10
On days of use, typically how many hours did you spend out on the Lake?	1.5 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2021 Mastercraft Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	48
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2006 Centurion Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	5
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2016 Axis Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	25
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2014 G3 Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Early June
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2004 Four Winns Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2020 Barletta Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Last week of June
Typically, when do you remove your boat from the Lake at the end of the season?	2nd week of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	25
On days of use, typically how many hours did you spend out on the Lake?	5 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 Malibu Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	18
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1994 Bluewater Ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	3rd week of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	15
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2023 Mastercraft Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	45
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1976 Sailboat
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Late September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1978 Schiada Ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	55
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2010 Suncatcher Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	15
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	–
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 Manitou Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	30
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2000 Four Winns Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	30
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2018 G3 Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	16
On days of use, typically how many hours did you spend out on the Lake?	8 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2009 Sweetwater Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October 15th
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	101
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2021 Malibu Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Mid June
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	7
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2017 Supra Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	1st week of June
Typically, when do you remove your boat from the Lake at the end of the season?	End of Sept
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	40
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 Axis Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Late September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	25
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2004 Lowe Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Mid May
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	40
On days of use, typically how many hours did you spend out on the Lake?	8 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2020 Natique Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	120
On days of use, typically how many hours did you spend out on the Lake?	5 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2023 Mastercraft Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	July 1st
Typically, when do you remove your boat from the Lake at the end of the season?	Early October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	27
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2021 Suntracker Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	30
On days of use, typically how many hours did you spend out on the Lake?	2.5 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1988 Eliminator Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	40
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2008 Chapparal Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2002 SeaRay Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Mid - Late June
Typically, when do you remove your boat from the Lake at the end of the season?	Early - Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	15
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2007 Centurion Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2002 Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Early October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2019 Spectrum Fishing
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	30
On days of use, typically how many hours did you spend out on the Lake?	1 hour

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2024 Malibu Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	25
On days of use, typically how many hours did you spend out on the Lake?	7 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2019 Aqua Patio Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	1st of June
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	40
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2008 Centurion Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	35
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 Manitou Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	1st week of October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	25
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 Manitou Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	30
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2021 Manitou Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2001 Malibu Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	3rd week of June
Typically, when do you remove your boat from the Lake at the end of the season?	3rd week of August
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2018 G3 Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Late September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	90
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2019 Tige Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	4th of July
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	8
On days of use, typically how many hours did you spend out on the Lake?	6 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 Mastercraft Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	25
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2017 G3 Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Own, Primary Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Mid - Late September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	33 Days
On days of use, typically how many hours did you spend out on the Lake?	5 Hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2006 BSV Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	40
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 Monterey Ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	30
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2020 Godfrey Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	100
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2021 G3 Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	15
On days of use, typically how many hours did you spend out on the Lake?	6 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2021 Manitou Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	6 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 G3 Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	70
On days of use, typically how many hours did you spend out on the Lake?	4 hour

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2011 MB Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	June 1st
Typically, when do you remove your boat from the Lake at the end of the season?	October 1st
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	4
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2023 Malibu Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	30
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2006 Four Winns Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	30 Days
On days of use, typically how many hours did you spend out on the Lake?	4 Hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2018 Centurion Ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Early October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	8
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2014 Malibu Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	End June
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	12
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2021 Nautique Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	5
On days of use, typically how many hours did you spend out on the Lake?	8 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 MB Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	End of June
Typically, when do you remove your boat from the Lake at the end of the season?	1st week September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	14
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2023 Nautique Paragon Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Late September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2024 Malibu Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	July
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	4
On days of use, typically how many hours did you spend out on the Lake?	6 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2008 Nautique Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Early July
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2015 Malibu Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	50
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2006 Four Winns Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	15
On days of use, typically how many hours did you spend out on the Lake?	5 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	.
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2014 Aqua Patio Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	1st week of June
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	2
On days of use, typically how many hours did you spend out on the Lake?	5 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2008 G3 Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	1st of June
Typically, when do you remove your boat from the Lake at the end of the season?	Late September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	12
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2001 Chaparral Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	June 1st
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	5
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2009 Malibu Ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	10
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1985 Checkmate Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	2nd week of June
Typically, when do you remove your boat from the Lake at the end of the season?	2nd week in September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	30
On days of use, typically how many hours did you spend out on the Lake?	5 hours

Mile High Marina
Slip Customer Survey

Name	–
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2014 G3 Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	25
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 Avalon Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	3rd week of June
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	48
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2018 Yamaha Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	50
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 Godfrey Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2004 Nautique Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Early June
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	15
On days of use, typically how many hours did you spend out on the Lake?	6 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2020 Nautique GS22 Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	End of June
Typically, when do you remove your boat from the Lake at the end of the season?	End of August
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	25
On days of use, typically how many hours did you spend out on the Lake?	6 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2015 MB Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	35
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2014 Cobalt Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	25
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1993 Smokercraft Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Early June
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	50
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2023 Malibu Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	5 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2018 Tige Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Sept 15th
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	11
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1994 Cobalt Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Early October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	15
On days of use, typically how many hours did you spend out on the Lake?	6 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2023 Supreme Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Early June
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	6
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1998 Victoria Cabin Crusiser
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	No
Typically, when do put your boat in the Lake?	Memorial
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	50
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2001 Searay Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	50
On days of use, typically how many hours did you spend out on the Lake?	7 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2021 Manitou Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	1
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2007 G3 Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Early October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	16
On days of use, typically how many hours did you spend out on the Lake?	5 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2005 Four Winns Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 Sweetwater Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	No
Typically, when do put your boat in the Lake?	Last week in June
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	15
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2012 Four Winns Deck
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	100
On days of use, typically how many hours did you spend out on the Lake?	6 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2016 Godfrey Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Own No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	42
On days of use, typically how many hours did you spend out on the Lake?	4 Hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2015 Malibu Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Early October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	40
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2002 Searay Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	June 1st
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	18
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2021 Chaparral Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	6
On days of use, typically how many hours did you spend out on the Lake?	6 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1999 Mcgregor Sail
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of Septmeber
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	40
On days of use, typically how many hours did you spend out on the Lake?	6 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2023 G3 Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Mid Septemeber
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1983 Balboa Sailboat
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October 1st
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	45
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2017 Mastercraft Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	No
Typically, when do put your boat in the Lake?	Mid June
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 Nautique Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	June 1st
Typically, when do you remove your boat from the Lake at the end of the season?	October 1st
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	14
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2015 Super Air Nautique Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Mid June
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	50
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 MB Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	July 1st
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	75
On days of use, typically how many hours did you spend out on the Lake?	6 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	.
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1997 Malibu Ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	End of June
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	12
On days of use, typically how many hours did you spend out on the Lake?	6 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 Mastercraft Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1991 Searay Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	16
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2023 Manitou Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Early June
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	15
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 Manitou Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	30
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1999 Four Winns Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Mid October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	40
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2016 G3 Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	48
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2005 Bennington Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	15
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2006 Four Winns Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Mid June
Typically, when do you remove your boat from the Lake at the end of the season?	Late September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	10
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2020 Mastercraft Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	35
On days of use, typically how many hours did you spend out on the Lake?	5 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2014 Sweetwater Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Mid June
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	8
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2007 Nautique Ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	6
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	154
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2003 Chaparral Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2016 Sweetwater Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Early June
Typically, when do you remove your boat from the Lake at the end of the season?	Early September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	3
On days of use, typically how many hours did you spend out on the Lake?	6 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1987 Malibu Ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Early June
Typically, when do you remove your boat from the Lake at the end of the season?	Late September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	15
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2023 Manitou Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	5
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1999 Mastercraft Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	120
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2018 Malibu Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	1st week of October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	100
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2018 Supra Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	September 15th
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	30
On days of use, typically how many hours did you spend out on the Lake?	2.5 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2019 G3 Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	First week of June
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	36
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2023 Mastercraft Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Mid June
Typically, when do you remove your boat from the Lake at the end of the season?	Mid October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	53
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2012 Suntracker Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Early June
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	2
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2017 Axis Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of Septemebr
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	50
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2024 Godfrey Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	July 1st
Typically, when do you remove your boat from the Lake at the end of the season?	2nd week of Septemebr
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	12
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2022 Godfrey Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	15
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2018 MB Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Early June
Typically, when do you remove your boat from the Lake at the end of the season?	End of October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	100
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1997 Jet Boat
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Labor Day
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	30
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2014 Regal Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	25
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2024 Nautique Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Early June
Typically, when do you remove your boat from the Lake at the end of the season?	End of Septemeber
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	10
On days of use, typically how many hours did you spend out on the Lake?	3 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2007 G3 Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	20
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2002 Malibu Ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	June 15th
Typically, when do you remove your boat from the Lake at the end of the season?	September 10th
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	15
On days of use, typically how many hours did you spend out on the Lake?	5 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1995 Cobalt Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	1st October
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	50
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	-
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2001 Four Winns Cabin Cruiser
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes No
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	End of September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	40 days
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2021 ATX Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	2nd week September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	40
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	1990 Fourwinns Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Early June
Typically, when do you remove your boat from the Lake at the end of the season?	Mid September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	60
On days of use, typically how many hours did you spend out on the Lake?	2 hours

Mile High Marina
Slip Customer Survey

Name	
Slip #	
What is the year, type and model of your boat? (Runabout, ski, surf, pontoon, sail, jet)	2021 Tige Surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance from the Marina?	Yes Yes
Typically, when do put your boat in the Lake?	Memorial Day
Typically, when do you remove your boat from the Lake at the end of the season?	Late September
How many days would you estimate you used your boat on Payette Lake during the 2023 season (in other words, took your boat out of the Marina and onto the Lake)?	30
On days of use, typically how many hours did you spend out on the Lake?	4 hours

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	27' CORD. WOODEN / 22' Schiada Day Cruis
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Y Cascade
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20 days
On days of use, typically how many hours did you spend on the Lake?	6 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot Y 75% time

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	20' Pontoon TBD
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y - Rental + Friends City 95% → Ponderosa 5%
Do you currently use the boat in any other water bodies? Which ones?	NO
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	30 days / 15 day just sitting on boat
On days of use, typically how many hours did you spend on the Lake?	4 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Friends property Y - that some. 25%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	21' CrissCraft Wooden Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Lucky Peak
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	10
On days of use, typically how many hours did you spend on the Lake?	4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	C. Lot Yes 1/2

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	22' Cobalt 1989
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Y
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20
On days of use, typically how many hours did you spend on the Lake?	3-4 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Storage Unit N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	NO (Sold 2022)
What is the year, type and model?	Wants: Ciss Craft Runabout ~~Classic Ciss Craft~~
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Yes Yes
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Yes City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	Sold
On days of use, typically how many hours did you spend on the Lake?	4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Walking from Home N/A N/A

Mile High Marina
Waitlist Survey

Name Tyrell TROUT	
Do you own a boat?	Air Naut. 24'
What is the year, type and model?	'06 BURF.
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	YES NO
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y BOTH
Do you currently use the boat in any other water bodies? Which ones?	Priest Lake
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	25
On days of use, typically how many hours did you spend on the Lake?	5 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	evenings City Lot Yes. → Ponderosa 1/2 Time 50%

Comment: goes to ponderosa when City Lot is full

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	21' Criss Craft
What is the year, type and model?	1942
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Donnelly NO
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City (weekly use)
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	15 days
On days of use, typically how many hours did you spend on the Lake?	3-4 hrs.
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City lot Yes (weekends) 1 or 2 per season.

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Yes
What is the year, type and model?	22' Yamaha Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20 Days / Weekly
On days of use, typically how many hours did you spend on the Lake?	4 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot No 4TH of July week

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	20' Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Both
Do you currently use the boat in any other water bodies? Which ones?	Yes all Idaho
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	24 days
On days of use, typically how many hours did you spend on the Lake?	3-4 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	N/A N/A N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	Natique Paragon 23'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	~~Y~~ Shore Lodge / Air BNB No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Y out of state
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	15
On days of use, typically how many hours did you spend on the Lake?	4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Shore Lodge N/A N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	1998 Malibu Ski 18'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Both
Do you currently use the boat in any other water bodies? Which ones?	Y Lucky Peak
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	10
On days of use, typically how many hours did you spend on the Lake?	(4) hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	House typically Y 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2007 Horizon Runabout 22'
Do you own or have ready access to a residence in Valley County?	Y
If so, is the residence within walking distance of the Marina?	Y
Do you currently use your boat in Payette Lake?	Y
Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	using Mile High for delivery
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	25 days
On days of use, typically how many hours did you spend on the Lake?	4 hrs.
On days of use, typically where do you park your vehicle and trailer?	N/A
Have you ever been unable to find a parking spot in the City Lot upland from the Marina?	N/A
If so, how frequently does this occur?	N/A

Comments: Slip @ Shore Lodge

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2012 TomCat MB sport 21'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	4 day 160
On days of use, typically how many hours did you spend on the Lake?	6
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Friend house N/A N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	22' Pont
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Shore Lodge No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Marina City Ramp
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	5
On days of use, typically how many hours did you spend on the Lake?	4-6 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Shore Lodge N/A N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	'24 Nautique Paragon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y C
Do you currently use the boat in any other water bodies? Which ones?	Y > Cordelaine SP? Priest Lake Cheran Lake
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	14
On days of use, typically how many hours did you spend on the Lake?	6 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	STREET / Condo N/A N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	NXT 20' MSTR CRFT
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y CC
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20
On days of use, typically how many hours did you spend on the Lake?	2 HRS.
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City No (odd hours)

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	23' Malibu Wakesetter
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Slip @ Shore Lodge
Do you currently use the boat in any other water bodies? Which ones?	ND
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20
On days of use, typically how many hours did you spend on the Lake?	6-8 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	N/A N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	20' outboard Duck Worth
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Ponderosa
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	12
On days of use, typically how many hours did you spend on the Lake?	2-4 hrs.
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Ponderosa N/A N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2015 Thunderjet 20' fishing
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Reser
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	12
On days of use, typically how many hours did you spend on the Lake?	4 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot No N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2016 Tige 23 23'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Lucky Peak
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	18
On days of use, typically how many hours did you spend on the Lake?	4 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Condo N/A N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model? 19'	2004 Prince Craft Deck Boat
Do you own or have ready access to a residence in Valley County?	Y
If so, is the residence within walking distance of the Marina?	Y
Do you currently use your boat in Payette Lake?	Y
Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Both
Do you currently use the boat in any other water bodies? Which ones?	NO
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20
On days of use, typically how many hours did you spend on the Lake?	4-5 hrs
On days of use, typically where do you park your vehicle and trailer?	street
Have you ever been unable to find a parking spot in the City Lot upland from the Marina?	N/A
If so, how frequently does this occur?	N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	23' Custom Weld Jet 1999
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Ponderosa
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	5
On days of use, typically how many hours did you spend on the Lake?	4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Condo New Meadows N/A N/A

Comments: Would use more if he had a slip.

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	22' Pont
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	30
On days of use, typically how many hours did you spend on the Lake?	4-6 hrs.
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot or Pond. Yes often

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	28' Pont
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	15 day
On days of use, typically how many hours did you spend on the Lake?	4-6 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot / Home Yes 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y Runabout
What is the year, type and model?	18' Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Ponderosa / City
Do you currently use the boat in any other water bodies? Which ones?	~~Y~~ No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	5
On days of use, typically how many hours did you spend on the Lake?	2-4 HRS
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Bring it home Yes

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	17' Ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20
On days of use, typically how many hours did you spend on the Lake?	3-4 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City lot or house Y often.

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2016 Pontoon 20'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Ponderosa
Do you currently use the boat in any other water bodies? Which ones?	Y Cascade
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20
On days of use, typically how many hours did you spend on the Lake?	2-3 Hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Ponderosa N/A N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model? 2021	26' Wake Surf Heyday
Do you own or have ready access to a residence in Valley County?	Y
If so, is the residence within walking distance of the Marina?	Y
Do you currently use your boat in Payette Lake?	Y
Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20
On days of use, typically how many hours did you spend on the Lake?	6 HRS
On days of use, typically where do you park your vehicle and trailer?	City
Have you ever been unable to find a parking spot in the City Lot upland from the Marina?	Y
If so, how frequently does this occur?	50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2016 Tige Wake
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y – No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	No/Yes Lucky Peak City
Do you currently use the boat in any other water bodies? Which ones?	Yes
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	5 days
On days of use, typically how many hours did you spend on the Lake?	4-6
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot Yes 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	22' 4 Winn
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y ~~#~~ NO
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	~~NO~~ Yes City
Do you currently use the boat in any other water bodies? Which ones?	NO
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	25
On days of use, typically how many hours did you spend on the Lake?	6 HRS
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot Yes 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2018 Sanger 21' SH
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	NO
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20
On days of use, typically how many hours did you spend on the Lake?	4 Hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City / Ponderosa Y 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	24' Ski Boat Nautique
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	25
On days of use, typically how many hours did you spend on the Lake?	2-4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Yes 1/3'RD of the time

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2016 Gemini Pontoon 24'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Y Lucky Peak
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	5
On days of use, typically how many hours did you spend on the Lake?	6 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot No

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	Jet BOAT 20'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Y River
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20
On days of use, typically how many hours did you spend on the Lake?	4 HRS
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot Y Several

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2020 Boston WH/r 17'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	40
On days of use, typically how many hours did you spend on the Lake?	6 Hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lots Y 25%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y TBD
What is the year, type and model?	22' Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Both (Busy?)
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	15-20
On days of use, typically how many hours did you spend on the Lake?	3 Hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Yes Often

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2020 Suntracker 16'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Ponderosa
Do you currently use the boat in any other water bodies? Which ones?	Y Cascade occas.
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	5
On days of use, typically how many hours did you spend on the Lake?	4-5
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City lot or Ponderosa Y often

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	NO (TBD)
What is the year, type and model?	22' Wake/Ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	No Both
Do you currently use the boat in any other water bodies? Which ones?	NO
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	30
On days of use, typically how many hours did you spend on the Lake?	6 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	N/A N/A N/A

Comments: Building in Blk Hawk River
Boat listed will be purchased
for the slip.

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	22' Centurion
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Rentals Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	15
On days of use, typically how many hours did you spend on the Lake?	3-4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City lot or rental home Yes a few (timing is everything) 25%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	1998 4Winns 20'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Y Lucky P.
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	10
On days of use, typically how many hours did you spend on the Lake?	4 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Yes Several: usually get there early or later afternoon.

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	15' fishing boat Smokercraft
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Summer Rental No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Ponderosa
Do you currently use the boat in any other water bodies? Which ones?	Y Phillips
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	14
On days of use, typically how many hours did you spend on the Lake?	10-3 5hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Ponderosa (City if avail) Yes ~~often~~ 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y TBD
What is the year, type and model?	21' Ski Boat → Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	NO
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	5 day
On days of use, typically how many hours did you spend on the Lake?	4 HRS
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Yes 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2022 GS SKI NAUT. 22'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Y Priest
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	15
On days of use, typically how many hours did you spend on the Lake?	4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City if avail. Y 75%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	22' Jet Boat Yamaha
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y NO
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Sac. Delta
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	15
On days of use, typically how many hours did you spend on the Lake?	4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Y 75%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	22' Pontoon Suntracker
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	45
On days of use, typically how many hours did you spend on the Lake?	2-4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot Y 25%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	24' Pontoon (Clean Wash)
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20
On days of use, typically how many hours did you spend on the Lake?	4 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot Y 75% of time

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	No
What is the year, type and model?	TBD 20' Ski Boat
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	N/A
Do you currently use the boat in any other water bodies? Which ones?	
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	
On days of use, typically how many hours did you spend on the Lake?	
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2000 21' MB Ski/Wake Board
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Both
Do you currently use the boat in any other water bodies? Which ones?	NO
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	10
On days of use, typically how many hours did you spend on the Lake?	6 HRS
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City or Street Y 3-4 times

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	No Redline
What is the year, type and model?	Rental from Redline
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	10
On days of use, typically how many hours did you spend on the Lake?	6 HRS
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City lot / or street Yes

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	Mstr Craft 21' Wake Ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	10
On days of use, typically how many hours did you spend on the Lake?	4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Y Y 1 out of 4

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	22' SeaRay Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Bath
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20
On days of use, typically how many hours did you spend on the Lake?	4 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot YES 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	24' Pontoon 2021
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Y – Cascade
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	5 days
On days of use, typically how many hours did you spend on the Lake?	6 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Yes 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	21' Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	10
On days of use, typically how many hours did you spend on the Lake?	5 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Yes 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	17' Fishing Alum
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Both
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	15-20
On days of use, typically how many hours did you spend on the Lake?	2 HRS
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot ~~No~~ Yes ~~No~~ 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	30' Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Y Lucky Peak
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	10
On days of use, typically how many hours did you spend on the Lake?	4 Hr
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot Y 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	21' SURF Axis 2021
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Both
Do you currently use the boat in any other water bodies? Which ones?	Yes Montana Lake
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20
On days of use, typically how many hours did you spend on the Lake?	4 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City lot or house YES 50% Weekends

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2017 MSTR 24' ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Both
Do you currently use the boat in any other water bodies? Which ones?	N
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20
On days of use, typically how many hours did you spend on the Lake?	4-6
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Res. or ~~boat~~ Ramp City Lot <br~~N/A~~ Yes <br~~N/A~~ 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	24' Pontoon 2022
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Yes, Spring Lucky Peak
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	24 days
On days of use, typically how many hours did you spend on the Lake?	2 Hrs (mornings)
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	House N/A N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	16' Aluminum fishing → 23' Pontoon
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Yes Lucky Peak on occ.
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	5 days
On days of use, typically how many hours did you spend on the Lake?	2-3 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	House / City Lot Yes Often

Comment: Looking @ a Montero Pont / Surf Boat. (Nightmare of a boat)

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2021 Thunderjet Alum outboard fish.
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Yes Lucky Peak
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	15
On days of use, typically how many hours did you spend on the Lake?	4-6
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot No N/A

Mile High Marina
Waitlist Survey

Name	3
Do you own a boat?	Yes
What is the year, type and model?	2005, Reinel 24BR ~~Sk~~ Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y NO
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	YES City
Do you currently use the boat in any other water bodies? Which ones?	NO
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	~~10~~ (15)
On days of use, typically how many hours did you spend on the Lake?	evenings ~~4~~ 3HRS
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City lot Yes 1/2 the

Comments: Cheap Thrills uses many spots in City Lot + a problem @ the ramp. They also clog up the beach + swim area.

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	No
What is the year, type and model?	TBD — Pont.
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	No ~~No~~ Yes (looking to buy)
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	N/A City
Do you currently use the boat in any other water bodies? Which ones?	2
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	guess 30-40
On days of use, typically how many hours did you spend on the Lake?	3-4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Walking from Condos N/A N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	20' Malibu VTX Ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Pond.
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20 Days
On days of use, typically how many hours did you spend on the Lake?	4-6
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Ponderosa N/A N/A

Mile High Marina
Waitlist Survey

Name	J.
Do you own a boat?	Y
What is the year, type and model?	20' Pont
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Both
Do you currently use the boat in any other water bodies? Which ones?	Some 80%
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20 Day
On days of use, typically how many hours did you spend on the Lake?	4-6 Hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City or Pond. Yes 1/2

Comment: They try City lot first then head to Ponderosa.

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2000 Alum. Jet 24'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Boise N/A
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	NO N/A
Do you currently use the boat in any other water bodies? Which ones?	
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	
On days of use, typically how many hours did you spend on the Lake?	
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	20' Crownline ski boat
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	NO No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	NO → Lucky Peak N/A
Do you currently use the boat in any other water bodies? Which ones?	
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	
On days of use, typically how many hours did you spend on the Lake?	
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2020 MasterCraft X24 ski/surf
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	PHX - Yes
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	60 Days
On days of use, typically how many hours did you spend on the Lake?	2 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Ramp or friends hs, Sometimes 3-4 times in summer Big weekends.

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2020 TIGE 23' RZX3
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Lucky Peak
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	45 days
On days of use, typically how many hours did you spend on the Lake?	3-4 hrs.
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Can-Am UTV N/A N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	N
What is the year, type and model?	TBD 22' Pont
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y N
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	N/A
Do you currently use the boat in any other water bodies? Which ones?	most likely Payette
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	N/A
On days of use, typically how many hours did you spend on the Lake?	N/A
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	N/A N

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	1995 Century Runaboat
Do you own or have ready access to a residence in Valley County?	Y
If so, is the residence within walking distance of the Marina?	Y
Do you currently use your boat in Payette Lake?	Y
Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Pond.
Do you currently use the boat in any other water bodies? Which ones?	Yes (Lacky Peak)
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	5
On days of use, typically how many hours did you spend on the Lake?	6 hrs
On days of use, typically where do you park your vehicle and trailer?	Ponderosa / on City lot
Have you ever been unable to find a parking spot in the City Lot upland from the Marina?	No
If so, how frequently does this occur?	N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	1973 Century Coron 22'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	5
On days of use, typically how many hours did you spend on the Lake?	4-5 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City lot No / Condo N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	1974 Carver 26' - Runabout
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Cities
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	12
On days of use, typically how many hours did you spend on the Lake?	6-8 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Cities Yes once (early

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2009 SeaRay 185 sp. 19'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	~~No~~ Yes ~~No~~ Yes
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Yes City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	21
On days of use, typically how many hours did you spend on the Lake?	4 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City lot Yes not often - she comes @ off hours

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	Pontoon 20'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	35
On days of use, typically how many hours did you spend on the Lake?	4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Property Y 50%

Comments: Currently has a boat at May Marina: 18' Runabout

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2023 Mstr Cft XL 24'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Dock
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	15
On days of use, typically how many hours did you spend on the Lake?	4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Dock No N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	1992 4Winns Cabin 27'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Yes Lucky Peak
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	5
On days of use, typically how many hours did you spend on the Lake?	4-6
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lots No (during week off hours) N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	22' Centurion Ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	NO
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	8-10
On days of use, typically how many hours did you spend on the Lake?	4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City/Street Yes 75% times

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	19' Tahoe fishing outboard
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	15
On days of use, typically how many hours did you spend on the Lake?	5 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot Yes. 30% (early morn)

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	24' Supreme Wake
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Yes City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	28 days
On days of use, typically how many hours did you spend on the Lake?	4-6 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot Yes 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	'~~22~~ Tige 2006 VE
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	12
On days of use, typically how many hours did you spend on the Lake?	4-6
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot/Street Yes 90%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	Malibu Wake 2016 '25
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y ~~N~~ Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	10
On days of use, typically how many hours did you spend on the Lake?	4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Home N/A N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	23' Montera SKI/Pont.
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20
On days of use, typically how many hours did you spend on the Lake?	2-4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Lot or Street or Home Yes 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	22' SeaRay ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y NO
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y Both
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	15
On days of use, typically how many hours did you spend on the Lake?	6 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City / Ponderosa YES 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2023 SUPRE SL 23'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y City
Do you currently use the boat in any other water bodies? Which ones?	Yes Cascade · Lucky
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20
On days of use, typically how many hours did you spend on the Lake?	5 hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	City Yes 50%

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	~~NO~~ N TBD
What is the year, type and model?	~~1984 Sea~~ 20' Pont.
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y "grey stone"
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	N/A N/A
Do you currently use the boat in any other water bodies? Which ones?	N/A
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	↓
On days of use, typically how many hours did you spend on the Lake?	
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	↓

Comment: Boat "to be determined" TBD
(smaller Pont or ski runabout.)

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2007 Custom Weld 23'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y CC
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	10
On days of use, typically how many hours did you spend on the Lake?	3 Hrs
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Cabin N/A N/A

Comments: Love just setting on boat w/out leaving marina.

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	1998 SKI NAUTIQUE 20'
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y PP (Pond. Park)
Do you currently use the boat in any other water bodies? Which ones?	YES CASCADE
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	15
On days of use, typically how many hours did you spend on the Lake?	4
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Pond. Park N/A N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Y
What is the year, type and model?	2005 BrunDater 19' ski
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	Y CC
Do you currently use the boat in any other water bodies? Which ones?	Man Creek - Weaver
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	5
On days of use, typically how many hours did you spend on the Lake?	2 HRS
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	Condo Complex N/A N/A

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	TBD
What is the year, type and model?	SURF Boat
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y No
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	N/A Rental City
Do you currently use the boat in any other water bodies? Which ones?	No
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	20 Rentals
On days of use, typically how many hours did you spend on the Lake?	4-6
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	N/A ↓

Comments: Using Redline & Cheap Thrills until slip is available.

Mile High Marina
Waitlist Survey

Name	
Do you own a boat?	Yes
What is the year, type and model?	24' Pont
Do you own or have ready access to a residence in Valley County? If so, is the residence within walking distance of the Marina?	Y Y
Do you currently use your boat in Payette Lake? Which ramp do you typically use when you boat on Payette Lake, the City ramps next to the Marina or the ramps at Ponderosa Park?	NO
Do you currently use the boat in any other water bodies? Which ones?	NO
How many days would you estimate you used your boat in Payette Lake during the 2023 season?	McCall 1/2 summer
On days of use, typically how many hours did you spend on the Lake?	0
On days of use, typically where do you park your vehicle and trailer? Have you ever been unable to find a parking spot in the City Lot upland from the Marina? If so, how frequently does this occur?	N/A (

Pontoons continue to lead in recreational boating sales

Adam Quandt • October 11, 2022

By Ryan Kloppe

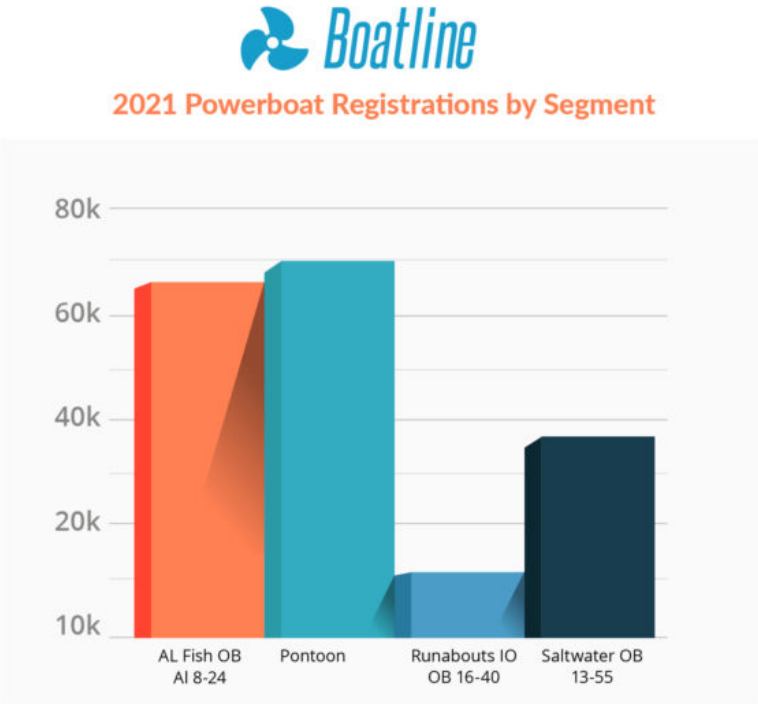
From raising a boat's sails on the wide-open ocean to spending a day cruising the lake, recreational boating has been more popular than ever over the last few years. Recreational boating saw record sales in 2020, with more Americans spending time on the water to escape from the hustle and bustle on land.

According to the U.S. Department of Commerce's Bureau of Economic Analysis (BEA), recreational boating/fishing was the leading contributor to the country's $689 billion outdoor recreation economy in 2020. Consumer interest and demand for recreational boating is still high, especially in the pontoon boat market.

Pontoons Setting the Pace

The pontoon market has demonstrated remarkable growth since 2008, when the financial crisis resulted in declines across the boating industry. According to data from Statistical Surveys Inc. (SSI), a Trader Interactive brand, pontoon boats, second to personal watercraft, have been a leading segment in the recreational boating industry over the last decade.

In 2021, pontoon boats made up 22% of total marine units registered that year, outperforming others in the main powerboat segment. For example, aluminum fishing and runabout boat registrations each declined 14%, from 2020 to 2021, whereas pontoon boats only saw a 5% dip over the same period of time.



SSI data also reveals that 2021 pontoon registrations were some of the highest we've seen over the past 10 years. This includes a 16% increase from 2019 (57,287) to 2021 (66,280) when other recreational boat segments saw declines.

The Popularity of Pontoons

Pontoon growth can be attributed to the manufacturers continuing to add features which make pontoons a very versatile boat.

Pontoon boats have seen great advancements to transform from the simple aluminum platforms they once were. Today, these all-purpose boats are the ultimate vessels for on-the-water relaxation and recreation, with manufacturers adding innovative features and dynamic designs to appeal to every type of water lover.

The success of pontoon boats compared to other powerboat segments could also indicate boaters converting to a more versatile watercraft that also has outboard power. Pontoons are now being manufactured with high horsepower engines, including three-tube models, for increased performance. The idea of how to utilize a pontoon boat has expanded from simply a vessel for lounging or partying to a boat that's also powerful enough for water sports as well.

Emerging Pontoon Markets

Pontoons have always been popular in specific lake markets. According to SSI data, Michigan, Minnesota, and Wisconsin are consistently the top states for national pontoon registrations, which isn't surprising given the states' proximity to the Great Lakes and abundance of in-land lakes. However, pontoon boats are also gaining popularity in new markets.

We're seeing growth in Florida and North Carolina the past couple of years. Both states have shown double-digit growth year over year. As of October 2022, SSI's 12-month rolling stats for national registrations show Florida (4,615) edging out Wisconsin (4,533), while just under Minnesota (4,767). Texas has also seen steady growth, on a 12-month rolling basis, from 2018 to 2021.

It's no coincidence that these six states also led the nation in new powerboat, engine, trailer, and accessories sales in 2020. According to data from the National Marine Manufacturers Association (NMMA), Florida generated $4.3 billion in sales, followed by Texas ($2.4), Michigan ($1.3), North Carolina ($1.2), Minnesota ($1.1), and Wisconsin ($967 million). Pontoons are quickly gaining traction and increasing popularity in these leading boat markets.

As we approach the end of 2022, industry experts are anticipating another strong year for recreational boat sales, particularly pontoons. While the overall year over year growth will be down compared to record numbers in 2020 and 2021, the pontoon market will remain strong for 2022 and beyond. It appears to be full speed ahead for the pontoon market.

Ryan Kloppe has been with Statistical Surveys Inc. (SSI), a Trader Interactive brand, since 2012. He has 25 years of sales experience in the marine, banking, and medical industries. While at SSI, Ryan has consistently increased sales year over year, while developing and maintaining successful business relationships. Ryan's work can be seen in multiple trade publications that are released on a monthly and quarterly basis. Ryan holds a Bachelor of Business Administration from Grand Valley State University. Ryan's exceptional work ethic and attention to detail has rewarded him with a very successful sales career.

ONE COMMENT

DICK CLARK

January 31, 2023 at 1:17 pm

Ryan: Great article. It's good to know what bpats are selling and why customers are buying them.

Reply

City of McCall
COMMUNITY DEVELOPMENT

www.mccall.id.us

216 East Park Street
McCall, Idaho 83638

Phone 208-634-7052
Main 208-634-7142
Fax 208-634-3038

Subject: CUP-23-07 – 1300 East Lake Street – City Council Questions

From: Brian Parker, City Planner

Date: April 4, 2024

The intention of this Memorandum is to provide a summary and review of answers to additional questions requested by the McCall City Council regarding the proposed conditional use permit for the Marina Expansion

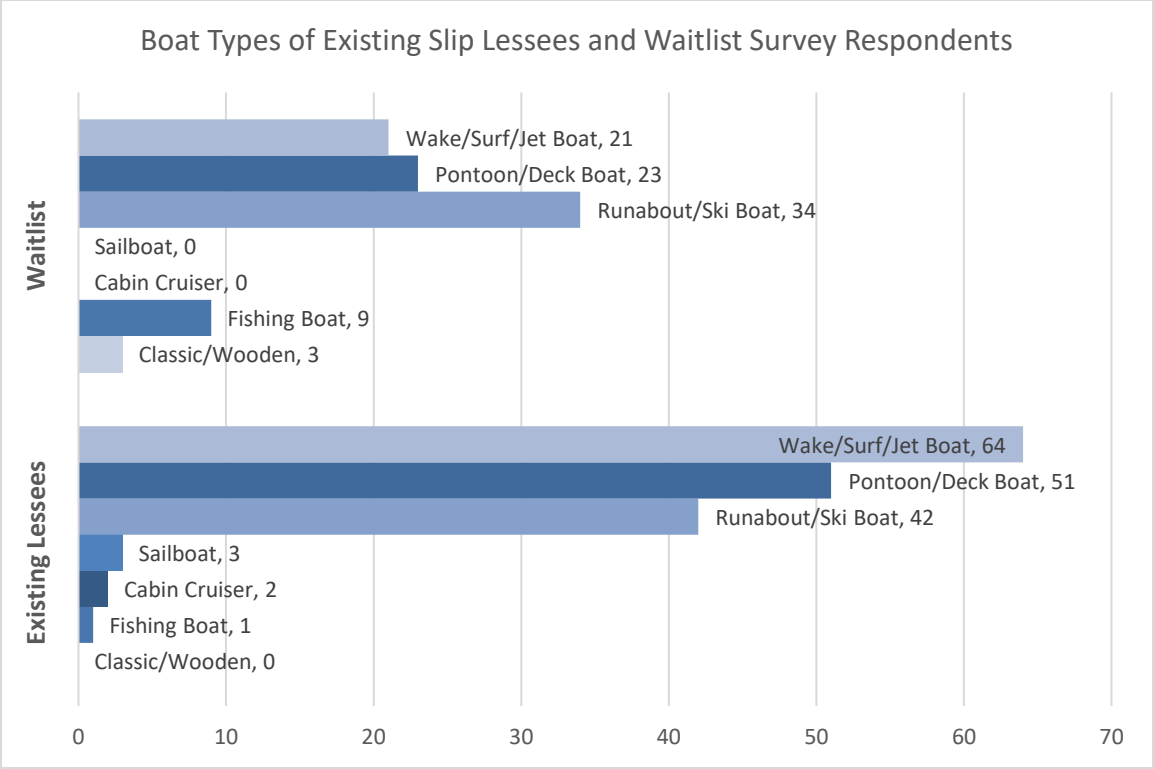
During the regularly scheduled February 8, 2024 McCall City Council Meeting, the Council deliberated on the subject application. At that time, the Council voted to reopen the public hearing for more information only from the applicant and staff on the subject application. Questions were provided by the Council to the applicant for additional information. The applicant's answers are attached, and staff's analysis is provided below.

Questions

For questions 1 and 2, please provide a classification system for boat types commonly found on inland lakes similar to Payette Lake. The classification system should consider the boats' capacities to generate wake, noise, and other environmental detractors.

1. **Describe the types and quantities of boats currently utilizing slips at Mile High Marina.**
2. **Provide information on the types and quantities of boats that could be reasonably expected to be docked at the new slips, either from information collected from the prior survey (which asked the question of what kind of boat), or if not available, sales trends (preferably in Idaho, but nationwide if necessary), or data collected from boater registrations in Idaho, or other sources as available.**

   For questions 1 and 2, the applicant has provided the results of phone surveys conducted by Mile High Marina staff of the 140 of the 160 existing lessees, as well as the first 90 individuals on the waitlist. The general quantities and types of boats are as follows:

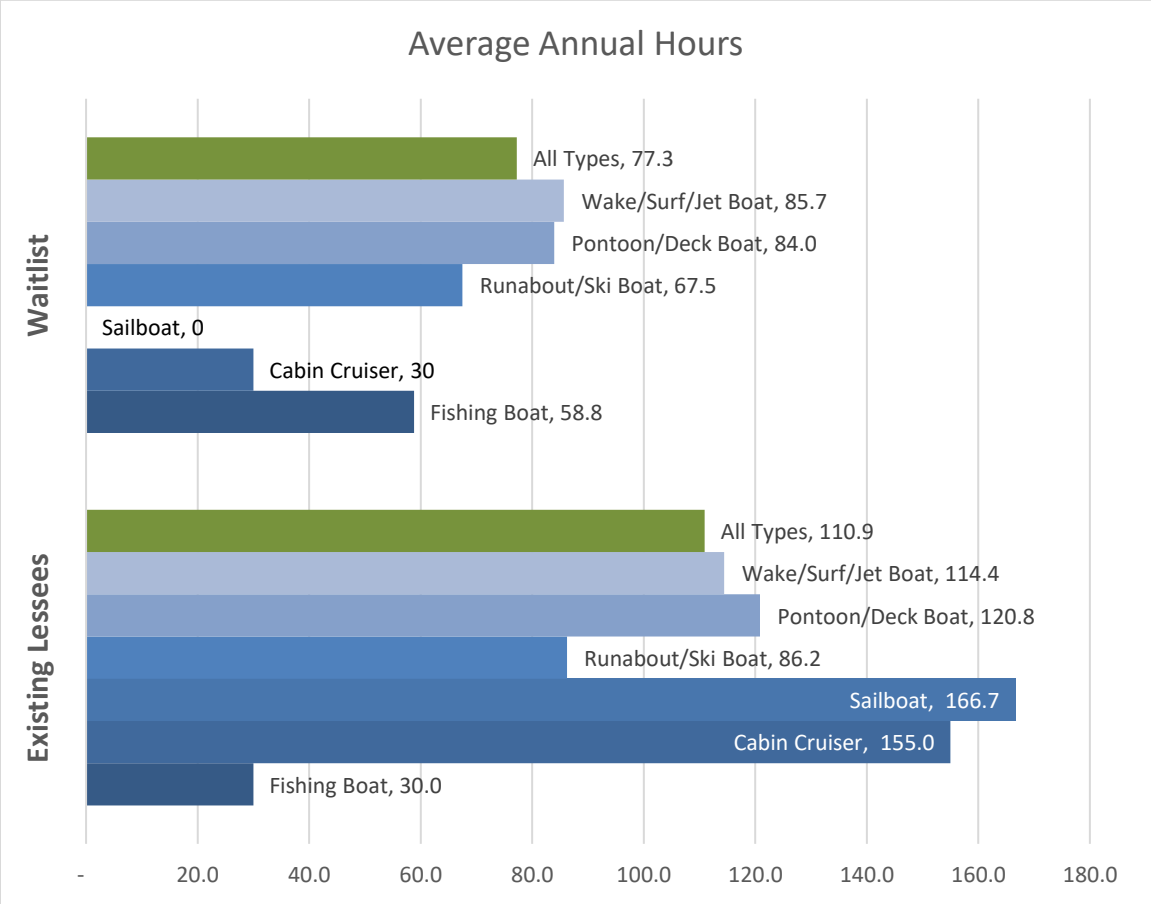


Data note: the boat type data of existing lessees was derived from the marina's records rather than the surveys, so the total number of boats exceeds 140.

Additionally, the applicant has stated that pontoon boats are a growing segment of the new sales in the boating industry. To support this statement, the applicant has provided an article from boatingindustry.com, a boat sales industry publication.

3. **Please provide any available information about boater miles used, frequency of use, or any metric that provides information on intensity of boat use by slip owners versus non-slip owners, either specifically to this marina, or otherwise.**

The surveys of existing lessees and waitlisted individuals asked for an estimate of the days per year and average duration of use per day. Multiplying these two provides an annual estimate of total boating hours.



Data note: staff compiled information regarding annual hours from individual survey responses. Not all waitlist responses clearly indicated the type of boat.

Payette Lake is generally accessed in three ways: boat launches, commercial marinas, or private docks. The Idaho Department of Lands (IDL) has provided the following counts of marina slips and private moorages:

		Count	Maximum Boat Moorage Per Unit	Total Moorage
Marinas	Mile High (Includes Expansion)			250
	May			86
	Shore Lodge			108
Private Moorages	Mooring Buoys	124	1	124
	Single Family Docks	396	2	792
	Two-Family Docks	30	4	120
	Community Docks (Small)	26	4	104
	Community Docks (Large)	20	16	320
			Total	**1,904**

It can be assumed that the existing lessees are generally a representative sample of slip lessees throughout the three (3) commercial marinas on Payette Lake. As more casual boaters would be less likely to find sufficient utility to rent a slip, the waitlist respondents can be expected to represent the heavier use population of the boat launch users. This assumption can be supported by comparing the waitlist survey to the surveys conducted for the Waterways Management Plan:

Annual Days of Use	Waitlist Survey	Waterways Management Plan Survey
0	7.8%	17.2%
1-5	15.6%	18.9%
6-15	32.2%	13.0%
16-25	33.3%	12.4%
25+	11.1%	38.5%

No data is available on usage rates by private dock users, and that information is outside the scope of this subject application.

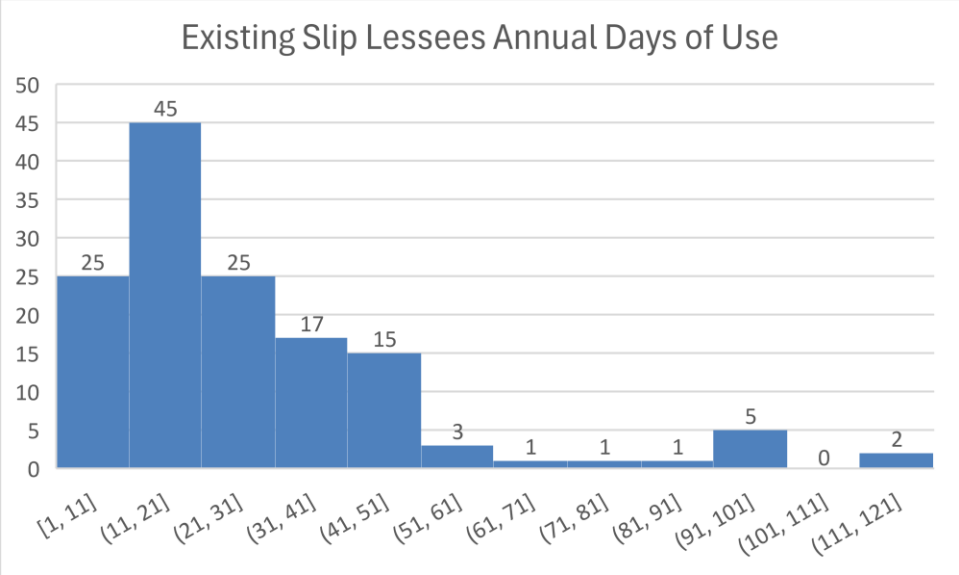
4. **How will additional boat traffic from the expanded marina, and specifically an increase in wake boat traffic, impact the social capacity and carrying capacity for Payette Lake that discussed in the Valley County Waterways Management Plan.**

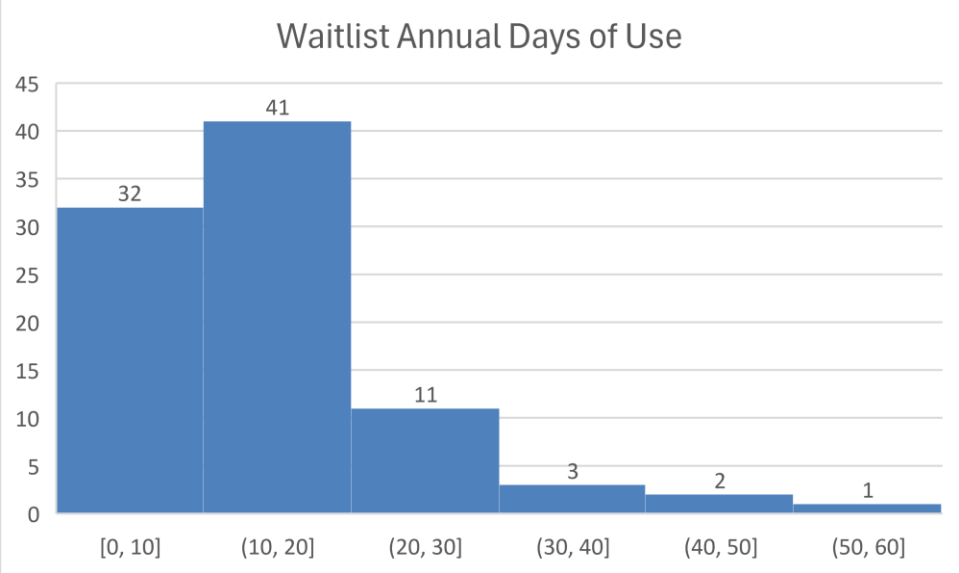
The Valley County Waterways Management Plan provides the following "Keystone Indicators" regarding capacity of Payette Lake:

Indicator	Baseline	Desired Future Condition
User Satisfaction	84% "Excellent" experience in surveys	>75% "Excellent" Experience in Surveys
Feeling of Crowdedness	13% of surveys indicate extreme crowding	<30% of surveys indicate extreme crowding
Acres Per Boat (peak usage)	57 (76 boats on lake)	40 (102 boats on lake)

The applicant's responses indicate that the total number of new boats added to the lake will be limited to the waitlist responses that indicated the person did not currently own a boat (eight (8) responses). However, in an email, the applicant's representative indicated that the boat number of boat launch users is not generally impacted by the amount of congestion or trailer parking availability, and absent management systems such as launch fees or paid parking, the usage of the boat launch would likely remain constant at or near current levels. This would indicate that the total number of new boats added to the lake would be much closer to the number of new slips added to the marina (ninety (90) new boats).

The survey data indicates that the overall usage of slip owners is approximately 44% higher than waitlist users. No data has been presented indicating any usage patterns of slip owners versus lessees at high congestion times. However, the average number of days used by slip owners is 29.6, in comparison to 17.2 average days of a waitlist respondent. If we assume the "high usage days" as Saturdays and federal holidays between Memorial Day and Labor Day (inclusive), there are nineteen (19) potential high usage days in a typical summer. Weather, wildfire smoke, and similar environmental factors are likely to eliminate a few high usage days out of a year. The inference to be made from the substantial difference in usage days between slip lessees and waitlist respondent is that slip lessees tend to boat on off days as well as high usage days, and that the increase in total hours used is unlikely to occur during high usage days.





The existing available “carrying capacity" of Payette Lake as identified in the Valley County Waterways Management Plan is an additional 26 boats at high usage times. For the reasons described above it is unlikely that the total number of boats on the lake during high usage times would be in excess of the 102 boats identified as a Keystone Indicator in the Waterways Master Plan as a result of the marina expansion. As mentioned above and recommendation in the Valley County Waterways Master Plan, launch fees and paid trailer parking would be tools available to effectively manage peak demand.

5. **Provide an analysis of the impacts of the proposed expansion on the boat launch and trailer parking area.**

   The applicant has indicated that the net impact on the boat launch and trailer parking would be the removal of approximately 1,300 launches, removals, and parking between launch and removal. As discussed above, this is predicated on the assumption that the net effect on lake usage would be limited to the waitlist members that do not currently own a boat. While that assumption is questionable, there is no reason to believe that the net effect of an expanded marina on the launch or trailer parking would be detrimental. As mentioned above and recommended in the Waterways Master Plan, launch fees and paid trailer parking would be tools available to effectively manage peak demand.

6. **Describe the impact of the proposed expansion on surface water quality and non-motorized usage in the vicinity of the marina.**

   The applicant's response describes the future plans for an expanded non-motorized use area in the vicinity of the marina, consistent with those identified in the McCall Parks, Recreation, and Open Space Plan (PROS Plan). The proposed board walk is a component of this future plan and would provide a southern "anchor" to a future non-motorized area. The applicants response fails to discuss any potential impacts on water quality that a non-motorized user could be impacted by as a result of additional slips in the marina. Staff has included relevant sections of the Environmental Protection Agency's (EPA) National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating for further information regarding potential surface water quality impacts and mitigation measures.

7. **Describe measures proposed to ensure that the proposed expansion will not have a detrimental effect on the health of Payette Lake.**

   The applicant is proposing the following measures to assure continued lake health:

   - A restriction on new leases to be exclusively for model year 2010 or newer boats, except for classic wooden boats.
   - A prohibition of new leases against two-stroke engines.
   - Continuance of the marina's milfoil abatement practices
   - Continuance of the marina's boater education program emphasizing no-wake zones and avoidance of creating wake in shallow waters.
   - An updated and formalized Spill Control and Response Plan.
   - The use of rubber splash guards on fuel dispensers.

   All proposed measures described above should be added as conditions of approval on the subject application.

8. **Describe the pollution created and associated impacts on air and water quality from the proposed expansion.**

   The proposed expansion is unlikely to generate day-to-day water quality impacts beyond potentially increasing the turbidity of the water within the lake. It is important to note that turbidity is not a contaminant in and of itself, but is an indicator of the overall water quality and can indicate an increased likeliness of contaminants to enter the drinking water supply due overtaxed filtration systems, as stated by the McCall Water System Manager. A larger concern

of water staff is the increased potential for spills and leaks to occur as a result of additional boats being consistently stored in the lake. The water system, as currently constructed, would not be able to supply more than one (1) (summer) day's worth of water if a spill event were to contaminate the water at the treatment plant.
The proposal to limit new leases to 2010 or newer boats would ensure that the new leases are for those that meet the EPA emissions standards, with the exception of classic wooden boats.

9. **Provide a greenhouse gas emissions inventory of the proposed expansion utilizing the methodology established in the *Corporate Accounting and Reporting Standard, Revised Edition*.**

   The applicant has provided a greenhouse gas (GHG) emissions inventory in accordance with the requested standards. As discussed above, the likely net change to the total boat usage of the lake is most likely somewhere between eight (8) and ninety (90) new boats. As such, the total emissions created by the proposed expansion will be greater than indicated in the inventory, but the specific quantity is unclear.

10. **There was a discussion regarding measures that the Marina currently does to contain/minimize milfoil invasion. Please provide information on what the current methods are, whether and/or how those methods will be extended to the proposed expanded marina.**

    The applicant has described the existing milfoil abatement program and has indicated that it would be expanded to include the footprint of the proposed marina after expansion.

11. **Provide the last 10 years, if available, of turbidity data, particularly for data collected in locations around the water intake pipe, the marina, legacy park, or in the general vicinity. There were some recent turbidity violations that were reported. If the reason for the increased turbidity is known to a reasonable degree of certainty, please provide that information (no speculation).**

    The applicant provided water quality reports for 2011-2016, and 2018-2022. Based on conversations with the McCall Water System Manager, turbidity measurements are taken at the treatment plant rather than at individual intakes, it is difficult to ascertain with much confidence the primary source of turbidity issues.

12. **With respect to turbidity, provide information of how more boats, and in particular wake boats, leaving the marina may disturb near-shore sediment.**

    The applicant has provided a study published in the Journal of Water Resource and Protection on March 23, 2022 entitled "Numerical Study of the Impact of Wake Surfing on Inland Bodies of Water." The study finds that impacts to shorelines or sediment mixing can be effectively minimized through proper enforcement of the current no-wake zones.

13. **Public comment stated that there are newer wake boats capable of 6' waves, and that have a fuel system that expels exhaust under water rather than in the air. It would not be unreasonable to assume such newer wakes boats may be docked in the expanded marina initially, or as the newer boats become more prevalent. (I don't know how new these boats are.) Provide information regarding the new fuel injection system for wake boats and any information about how far out and in the water column such exhaust may impact water quality for drinking, and also water quality for swimming. In other words, can drinking water quality as well as water quality at Legacy Park, Brown Park, and in the vicinity of the marina be impacted for swimmers and non-motorized users?**

The applicant has indicated that no wake boats currently on the market or anticipated to be coming to the market soon are capable of a six-foot (6') tall wave. The public comment was likely in reference to a boat capable of creating a six-foot (6') wide surfable face on a wave.

14. **There was discussion in the public hearing about parking, and that parking congestion might be alleviated because the boat owners with slips will not have to park trailers to boat. However, now there are 90 boats that are associated with 90 cars that will come to access their boats. Provide further information or analysis on how the project intends to address additional parking that would be needed to accommodate the slip renters.**

    The waitlist survey indicated that 37 of the respondents had access to a residence within walking distance of the marina, and 87 had access to a residence in Valley County. As boating is an inherently fair-weather activity, it is reasonable to assume that a significant portion of the slip lessees will opt to walk or bike to access their boat rather than driving and parking. The applicant is proposing to improve the bike parking and multiuse travel lane in proximity to the marina, and the City should continue to focus efforts on improving bicycle and pedestrian infrastructure and providing housing near downtown in accordance with the goals of the McCall Area Comprehensive Plan.

15. **If boat slip renters now will not need to find parking spaces large enough for their trailers, then can park in smaller spaces that are further from the marina. How will the lack of parking impact parking that is designed significantly for non-boat users of Legacy Park?**

    There is not a designated parking area for Legacy Park. As discussed above, efforts should be made to encourage non-motorized travel to the marina and Legacy Park. Parking is currently available near Legacy Park on-street and at city-owned public parking facilities.

16. **Clarify the ADA accessible parking spaces – number and location.**

    The applicant has indicated that there are two ADA parking spaces. However, the site plan indicates that the existing ADA parking space would be relocated to the other side of East Lake Street. An application for the redevelopment of the vacant parcel across East Lake Street has been submitted with frontage improvements proposed. The proposed relocated ADA parking space would be retained with those improvements and enhanced with the construction of a sidewalk and bulb-out along the east side of East Lake Street.

17. **Provide information in the context of how the proposed expansion is consistent with/supports, or is inconsistent with, the City's adopted Greenhouse Gas Emissions Inventory and Framework for Climate Action Planning.**

    The applicant has provided recommended "green" practices and is proposing to purchase carbon offsets for an increase of eight (8) boats worth of usage. Staff is supportive of these proposals and encourages the applicant to consider a localized carbon offset strategy such as using the equivalent carbon offset funds to purchase electric boat chargers or similar zero carbon infrastructure.

18. **Is the applicant willing to have conditions on the permit for the 90 new slips, that would prohibit:**

    a) **Commercial renters**

    The applicant is amenable to this restriction.

    b) **Subletting of slips**

    The applicant is amenable to this restriction.

    c) **Wake boats from renting**

    The applicant is not amenable to this restriction.

    d) **Any single party from renting more than one slip?**

    The applicant is amenable to this restriction.

Conditional Use Permit Criteria

For reference, the requirements for the granting of a conditional use permit found in McCall Code Section 3.13.03(B)(2) are below:

1. Constitute a conditional use authorized in the zone involved.
2. Be harmonious with and in accord with the general objectives and with any specific objectives of the comprehensive plan and/or this title.
3. Be designed, constructed, operated and maintained to be harmonious and appropriate in appearance with the existing or likely character of the neighborhood, and that such use will not change the essential character of the surrounding area.
4. Not be detrimental to the health, safety and general welfare of persons residing or working in the neighborhood of such proposed use.
5. Not cause any substantially harmful environmental consequences to any land or waters within the planning jurisdiction.
6. Not create excessive additional public cost for public facilities and services, and will not be detrimental to the economic welfare of the community.
7. Be served adequately by essential public facilities and services including highways, streets, police and fire protection, drainage structures, refuse disposal, water and sewer, and schools. The applicant may be required, as a condition of approval, to mitigate any deficient public service.
8. Not involve uses, activities, processes, materials, equipment or conditions of operation that will cause unreasonable production of traffic, noise, smoke, fumes, glare, odors or other forms of pollution.
9. Have vehicular approaches to the property so designed as not to create a detrimental interference with traffic on surrounding public or private thoroughfares, or adversely affect the pedestrian environment.
10. Not result in the destruction, loss or damage of an important natural, scenic or historic feature.
11. Be on a site of sufficient size to accommodate the proposed use, including the yards, open spaces, snow storage, walls, fences, parking areas, loading zones and design standards applicable.
12. Have a minimal negative economic impact on the neighborhood or surrounding community.

Recommended Conditions of Approval

Based on the information provided to date, if the Council chooses to approve the subject application, Staff recommends the following conditions of approval (changes since January 11, 2024 public hearing underlined).

	Prior to	Condition	Recommended Contact
1.	The issuance of a building permit	The applicant shall receive final engineering approval	City Engineer
2.		The final location and Design of the bicycle parking proposed to be installed within Legacy Park shall be reviewed and approved by the City of McCall Parks and Recreation Department.	Parks and Recreation Director
3.		The applicant shall consult with the Public Art Advisory Committee on a more specific plan regarding the installation of public art along the boardwalk area.	City Planner
		The applicant shall offset carbon emissions as discussed in Question 17 of the Applicant's Response Document.	City Planner
4.	The issuance of a certificate of occupancy	The applicant shall reseed all disturbed areas with native grasses or wildflowers	Building Official
		The applicant shall enter into a maintenance and operations agreement regarding the boardwalk facility.	Parks and Recreation Director

Expirations

1. This Conditional Use Permit approval shall lapse and become void whenever the applicant has not applied for a building permit within three (3) years from the date of initial approval.

Other

1. The City may utilize the marina and attenuator structures for the placement of monitoring equipment relating to lake health.
2. The City reserves the right to utilize the identified publicly accessible public art sites for the installation of public art.
3. Except for wooden boats built prior to 1999, No new leases for any boat slips shall be granted to boats built prior to 2010.
4. No new leases shall be granted to boats with a two-stroke engine.
5. The applicant shall continue to annually conduct milfoil abatement within the footprint of the marina, including the expansion area.
6. The applicant shall provide educational information to lessees regarding no-wake zones and the importance of avoiding the creation of wake in shallow waters.

7. The applicant shall follow the Spill Control and Response Plan included within the application materials as needed.
8. The applicant shall install and utilize rubber splash guards on fuel dispensers.

From:	Steve Millemann
To:	Brian Parker; Heather Potts; Sam Worley
Cc:	Meredith Todd; Michelle Groenevelt; BessieJo Wagner
Subject:	Re: CUP Applicant Responses to Additional Questions - Mile High Marina
Date:	Monday, March 11, 2024 6:42:05 PM
Attachments:	image002.png

Brian,
Thanks for the questions. See initial responses below.
We welcome further questions as you continue to review the Responses.
Best,

Steven J Millemann
Millemann, Pemberton & Holm LLP
208-634-7641

From: Brian Parker <bparker@mccall.id.us>
Sent: Monday, March 11, 2024 4:10 PM
To: Heather Potts <heather@mpmplaw.com>; Steve Millemann <sjm@mpmplaw.com>; Sam Worley <sam@worleysb.com>
Cc: Meredith Todd <mtodd@mccall.id.us>; Michelle Groenevelt <mgroenevelt@mccall.id.us>; BessieJo Wagner <bwagner@mccall.id.us>
Subject: RE: CUP Applicant Responses to Additional Questions - Mile High Marina

I'm starting to dive into this, but am already running into some confusion. Please clarify the following:

- Were the two surveys conducted via phone/verbally? Would it be possible to get (redacted if needed) copies of the individual tally sheets? SJM: They were conducted by phone. No problem providing redacted copies of the individual tally sheets.
- Is Question 1 answered in the Responses document? All the analysis in the Response to Question 1 seems to be in regard to Questions 2 and 3.SJM: Question 1 is answered in the Overall Tally Sheet attached as Exhibit A to the Cassidy Templeton Declaration. I can break it out if you need.
- Please help me equivalate the typologies of the existing lessee and waitlist boats.??
- The total number of boats in the existing lessee survey is 163, not 140. Is this a tabulation error, or did some of the lessees own multiple boats? SJM: Cassidy was only able to reach 140 of the existing lessees in the time available. We are very comfortable that this is a representative sample for purposes of the data presented.
- On the existing lessee survey, would it be possible to provide individual entry/exit dates and/or average days with a boat in a slip? SJM: The entry and exit dates are reported in the existing lessee Individual Tally Sheets. Waiting List people were just asked how many days they are on the Lake and typically how many hours per day of use. .
- On Question 7, would the "Classic Wooden Boats" identified on the waitlist be

prohibited from leasing, or are there retrofit options available to bring them up to 2010 EPA standards? Can you provide an estimate of how many existing lessee boats and waitlist boats are not up to the 2010 EPA standards? SJM: Note that the Classic Wooden Boats and Runabout Ski Boats were combined in Kelly Worley's Overall Tally Sheet of Waiting List folks. There are very few classic wooden boats on the Waiting List and only 2 in the Marina now. The Classic Wooden Boat owners don't particularly like being in a Marina. That being said, the classic wooden boats are an important part of the history of the Lake and will be exempted from the 2010 model year requirement. I am not sure that the profile of the existing lessee boats is within the scope of the current Application. And, I don't know that we will be able to provide exact counts as to the Waiting List, because not every respondent provided the year of their boat. Nonetheless, we will review the individual tally sheets and pass along what we find out. Keep in mind that the trend right now is that boaters are upgrading to new boats, particularly pontoon boats, as the boating population ages. Also, keep in mind that these slips won't be available for a couple of years. So, the protocol once the Application is approved will be to circle back to each of the first 90 Waiting List folks and, other than the few classic wooden boat owners, if the boat is not a 2010 or newer model, the Waiting List person will be given the opportunity to upgrade to a newer boat; or, Sam and Kelly will move to the next person on the List. They do not anticipate that this will ultimately be an issue, given the current trends.

- On Question 13, how does one measure the "length" of a wave? SJM: It would be the length of the surfable face of the wave.
- Generally, it seems that a lot of the responses are pointing to 8 new boats being added to the lake as an absolute total. The waitlist survey expressed challenges with congestion at the launch and with trailer parking. Did you conduct any research or analysis on what induced demand may occur once the 1,300 launches/retrieves and trailer parking alleviate some of the congestion, both at the launch and in the parking areas? SJM: The absolute fact is that 82 of the 90 respondents from the Waiting List reported that they already own a boat and already use it on Payette Lake. Thus, they are not "new boats" being introduced to the Lake by the expansion of the Marina and, to the extent that there are impacts related to these boats, those impacts are pre-existing and have nothing to do with the Marina offering them slips. There are no new impacts that result from them leaving their boats in a slip rather than trailering them in, particularly when you recognize that the relative days and hours of use between the two groups is not materially different. The 8 "new boats" is explained in the Responses as the **maximum number** of new boats which might become slip lessees. As explained in the Responses it is an overstatement, because 7 of those 8 respondents reported that they used a boat on the Lake in 2023 and intend to do so again in 2024, but do not currently own a boat. We erred on the side of overstating the actual impact of the expansion rather than understating it. On your second question, we did not try to evaluate the issue of "induced demand", nor do I know how we possibly would. It would be pure speculation and we frankly don't believe that the notion that less congestion will create new lake boaters is credible. People who own boats and want to use them on the Lake will do so and, except on the rare high traffic days like July 4, neither congestion nor parking will dissuade them, particularly given the availability of the ramp and parking at Ponderosa Park. Moreover, if this is a concern, then it is an issue that the City ultimately has the ability to monitor and control at its ramps as the City continues to work with the County and the State on

Lake capacity analysis.

It's fairly likely that more questions will be floating your way in the next couple days.

Thank you,

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City of McCall

From: Heather Potts <heather@mpmplaw.com>
Sent: Monday, March 11, 2024 1:44 PM
To: Brian Parker <bparker@mccall.id.us>
Cc: Steve Millemann <sjm@mpmplaw.com>; Sam Worley <sam@worleysb.com>; Meredith Todd <mtodd@mccall.id.us>; Michelle Groenevelt <mgroenevelt@mccall.id.us>; BessieJo Wagner <bwagner@mccall.id.us>
Subject: RE: CUP Applicant Responses to Additional Questions - Mile High Marina

This is correct, thank you.

Heather Potts
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From: Brian Parker <bparker@mccall.id.us>
Sent: Monday, March 11, 2024 1:40 PM
To: Heather Potts <heather@mpmplaw.com>

Cc: Steve Millemann <sjm@mpmplaw.com>; Sam Worley <sam@worleysb.com>; Meredith Todd <mtodd@mccall.id.us>; Michelle Groenevelt <mgroenevelt@mccall.id.us>; BessieJo Wagner <bwagner@mccall.id.us>
Subject: RE: CUP Applicant Responses to Additional Questions - Mile High Marina

Received, thank you. Since there are a few versions floating around, please confirm that the two attached documents are the version you would like me to review.

Thank you,

Brian Parker, AICP | City Planner
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City of McCall

From: Heather Potts <heather@mpmplaw.com>
Sent: Monday, March 11, 2024 8:42 AM
To: Brian Parker <bparker@mccall.id.us>
Cc: Steve Millemann <sjm@mpmplaw.com>; Sam Worley <sam@worleysb.com>
Subject: RE: CUP Applicant Responses to Additional Questions - Mile High Marina

Brian,
I realize that Attachment 19 was not labeled, see fully labeled attachments 1-21. Thank you.

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Sent: Monday, March 11, 2024 12:07 AM
To: Brian Parker <bparker@mccall.id.us>
Cc: Steve Millemann <sjm@mpmplaw.com>; Sam Worley <sam@worleysb.com>
Subject: CUP Applicant Responses to Additional Questions - Mile High Marina

Good morning Brian,
Attached please find the responses and attachments to the above referenced CUP City Council Additional Questions. Please let me know if you have any issues accessing or opening the documents. Thank you.

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United States
Environmental Protection
Agency

Office of Water
(4503F)

EPA 841-B-01-005
November 2001

National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating

National Management Measures to Control Nonpoint Source Pollution from Marinas and Recreational Boating

Nonpoint Source Control Branch
Office of Wetlands, Oceans and Watersheds
Office of Water
U.S. Environmental Protection Agency

November, 2001

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Edwin Drabkowski, U.S. Environmental Protection Agency, Office of Water, Nonpoint Source Control Branch, Washington, DC, was the primary author and project leader for this guidance document.

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Neil Ross, Neil Ross Consultants, Kingston, Rhode Island, provided valuable contributions

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SECTION 1: INTRODUCTION

Section 1 Contents

The Purpose and Scope of This Guidance

This national management measures guidance for marinas and recreational boating provides guidance to states, territories, authorized tribes, and the public regarding management measures that may be used to reduce nonpoint source pollution from marinas and recreational boating activities.

The guidance is intended to provide technical assistance to state program managers and others on the best practicable means of reducing nonpoint source pollution of surface waters from marinas and recreational boating. The guidance provides background information about nonpoint source pollution from marinas and recreational boating—including where it comes from and how it enters the nation's waters—and technical information about how to reduce nonpoint source pollution from marinas and recreational boating. It also discusses the relationship of marinas to the watersheds in which they are located.

The guidance can assist marina managers in identifying possible sources of nonpoint source pollution and offers potential solutions. Finding a solution to nonpoint source pollution problems at a marina requires taking into account the site-specific factors that together compose the setting of a marina. The best management practices (BMPs) presented in Section 4 of this guidance are recommended based on their successful application at many marinas nationwide. Their applicability to any particular marina or situation, however, must be determined based on site-specific factors. The applicability of the individual BMPs and combinations of BMPs should be considered within the overall context of the location, environment, design, and needs of the marina. Marina managers should make informed decisions, based on the circumstances at their particular marina, as to whether the BMPs in this guidance or others would be most effective for controlling nonpoint source pollution. Which BMP or combination of BMPs is used is not the critical point. Preventing water pollution is.

This guidance refers to statutory and regulatory provisions that contain legally binding requirements. It does not take the place of those provisions or regulations, nor is it a regulation itself. Thus, it does not impose legally binding requirements on the U.S. Environmental Protection Agency (EPA), states, territories, authorized tribes, or the public and might not apply to a particular situation. The decision

makers of EPA, states, territories, and authorized tribes retain the discretion to adopt approaches on a case-by-case basis that differ from this guidance where appropriate. EPA may change this guidance in the future.

The guidance is organized in six parts:

- Section 1 introduces the guidance.
- Section 2 discusses the sources of nonpoint source pollution and the specific pollutants of concern associated with marinas and recreational boating.
- Section 3 discusses management measures and site-specific BMPs generally, the use of combinations of BMPs (BMP systems), and the characteristics of surface waters where marinas are located.
- Section 4 introduces the 15 management measures for marinas and recreational boating and describes BMPs that can be used to achieve the management measures.
- Section 5 describes some models used to estimate pollutant loads and discusses water quality monitoring.
- Appendices provide additional relevant information.

The *management measures* in this guidance are the best available, economically achievable practices or combinations of practices that can be used to address nonpoint sources of pollution related to marinas and recreational boating. EPA originally identified 15 management measures for implementation within the state coastal management areas (see *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters* [USEPA, 1993]). The titles of the management measures are listed in the box to the above right. From discussions with marina owners and operators at facilities on fresh waters nationwide, these 15 management measures and associated practices have been found generally to be just as applicable to fresh water marinas as they are to coastal water marinas. They form the basic measures recommended in this guidance.

Management Measures for Marinas and Recreational Boating

Flushing
Water quality assessment
Habitat assessment
Shoreline stabilization
Storm water runoff
Fueling station design
Petroleum control
Liquid material management
Solid waste management
Fish waste management
Sewage facilities
Maintenance of sewage facilities
Boat cleaning
Boat operation
Public education

Best management practices are individual activities or structures that can be used alone or in combination to achieve the management measures. Refer to Section 4 for a thorough discussion of the 15 management measures for marinas and recreational boating and the known BMPs that can be used to achieve them.

The scope of this national management measures guidance is broad, covering diverse nonpoint source pollutants from marinas and recreational boating. Because it reflects all types of waterbodies, it cannot provide all practices and techniques suitable to all regional or local marina or waterbody conditions. Also, BMPs are continuously being modified and developed as a result of experience gained from BMP implementation and the innovation of marina managers across the country.

Management measures are steps that can be taken to control of the addition of pollutants from nonpoint sources. Management measures are achievable through the application of BMPs, technologies, processes, siting criteria, operating methods, or other alternatives.

Relationship to CZARA Guidance

Readers should note that this guidance is consistent with the *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters* (USEPA, 1993) published under section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA). This guidance does not supplant or replace the 1993 coastal management measures guidance for the purpose of implementing programs under section 6217.

Under CZARA, states that participate in the Coastal Zone Management Program under the Coastal Zone Management Act are required to develop Coastal Nonpoint Pollution Control Programs that ensure the implementation of EPA's management measures in their coastal management areas. The 1993 guidance continues to apply to that program.

This national management measures guidance modifies and expands upon the supplementary technical information contained in the coastal management measures guidance both to reflect circumstances relevant to differing inland conditions and to provide current technical information. It does not set new or additional standards for state Nonpoint Source Management Programs under section 319 of the Clean Water Act (CWA) or section 6217 of CZARA. It does, however, provide information that government agencies, private sector groups, and individuals can use to understand and apply measures and practices to address nonpoint source pollution from marinas and recreational boating.

National Water Quality Inventory

The nation's aquatic resources are among its most valuable assets. Although environmental protection programs in the United States like those implemented under the CWA have brought great improvements to water quality during the past 30 years, many challenges remain. Significant progress has been made in reducing pollution to the nation's waters from industrial and municipal wastewater treatment systems. Nevertheless, EPA reported in its 1998 *National Water Quality Inventory,* published in June 2000*,* that more than 35 percent of the inland waters and estuaries assessed are still too polluted to support their designated uses (based on survey information submitted by states, territories, and tribes). The health of these waters is primarily degraded by nonpoint source pollution, which is described more fully on page 1-4.

Every 2 years, EPA reports to Congress on the quality of the nation's waters in the *National Water Quality Inventory*. States, territories, and tribes survey the water quality in a sample of the rivers and streams; lakes, ponds, and reservoirs; estuaries; ocean shorelines; and/or Great Lakes shorelines in their jurisdictions and report the findings to EPA for the Inventory. Because each state, territory, and tribe surveys its jurisdictional waters according to individual priorities, the survey results cannot be generalized as the quality of the nation's waters overall, but the results do provide a snapshot of nationwide water quality and water quality trends.

The 1998 *National Water Quality Inventory* summarizes the water quality assessment reports submitted by states, territories, and tribes. Table 1-1 lists the overall percentages of each waterbody type surveyed and the water quality of those waters in terms of *designated use* support.

States, territories, and tribes designate waters as suitable for particular uses, depending on location, surrounding land use, and other factors. For instance, a river passing near an urban area might be designated to be used for noncontact recreation (such as fishing or boating), while a stream in a state park might be designated for aquatic life support. Water quality criteria are set for each waterbody according to its designated use(s).

The types of pollutants that degrade these waters are

> ***Designated uses*** are set by states as water quality goals for individual waterbodies. Designated use goals include drinking water supply, primary contact recreation (such as swimming), and aquatic life support. Each designated use has a unique set of water quality requirements or criteria that must be met for the use to be attained.

Table 1-1. Percentages of surveyed waters supporting designated uses.

Waterbody Type	Percent Surveyed	Fully Supporting All Uses[a]	Threatened for One or More Uses[a]	Impaired for One or More Uses[a]	Quantity of Waterbody Type in US
Rivers & Streams (miles)	23	65	10	35	3.7 million miles
Lakes, Ponds, & Reservoirs (acres)	42	55	9	45	41.6 million acres
Estuaries (square miles)	32	56	9	44	90,465 square miles
Ocean Shoreline (miles)	5	88	8	12	66,645 miles
Great Lakes Shoreline (miles)	90	4	2	96	5,521 miles

[a] Percent of units of waterbody type *surveyed* in this category. For example, 9 percent of the 32 percent of estuaries surveyed were threatened for one or more uses at the time of the survey.
Source: USEPA, 2000 (1998 Report to Congress)

- Nutrients (excess nitrogen and phosphorus).
- Sediment (from soil and shoreline erosion).
- Disease-causing bacteria (from animal waste washed into surface waters and inadequately treated sewage).
- Toxic metals (from mining runoff, storm-water runoff from urban and industrial areas, and industrial processes).
- Toxic organic chemicals (such as dioxins and polychlorinated biphenyls, or PCBs).
- Oxygen-depleting materials (organic materials like leaf litter that consume oxygen as they break down in the water).
- Pesticides (including insecticides and herbicides).
- Petroleum compounds (such as fuel, oil, and grease).
- Noxious or invasive aquatic plants (such as Eurasian water milfoil and water hyacinth).

The leading sources of these pollutants are agriculture, municipal point sources, industrial discharges, nonpoint sources (in general), urban runoff/storm sewers, atmospheric deposition, hydrologic modification (dams and shoreline modification), habitat modification, and mining.

Although marinas are not one of the major sources of pollution to our nation's rivers, lakes, or estuaries, they are centers of recreation, and poor or inadequate pollution prevention practices in them can result in human health problems and local water quality degradation. Examples of potential nonpoint source pollution problems at marinas include poor water circulation and flushing within the marina, petroleum spills from storage tanks and boat fueling, bilge oil discharges, and runoff from boat hull maintenance and engine repair areas. Nonpoint source pollution at marinas can also result from poor housekeeping practices (such as in-water boat washing with polluting detergents), a lack of containers for recycling solid and liquid waste materials, and inadequate sanitary facilities.

What Is Nonpoint Source Pollution?

Nonpoint source pollution results from rainwater and snow (or snowmelt) carrying pollutants picked up from the atmosphere or the ground to *surface water* and *ground water*. It is also associated with land runoff from irrigation or lawn watering, ground water drainage from mines and

landfills, seepage from broken or leaking pipes, and hydrologic modification. Hydrologic modification is anything that alters natural water currents, such as dams and levees or changes to natural shorelines with hard structures or excavation, such as riprap or cement. These are considered nonpoint sources of pollution because of the harm that can occur to the biological and physical integrity of surface and ground waters as a result of them. The nonpoint source pollutants that cause the greatest harm to surface waters are nutrients, sediments, organic matter, pathogens, and toxic compounds (including petroleum compounds and toxic metals).

> ***Surface waters*** include ponds, lakes, streams, rivers, estuaries, bays, and oceans. ***Ground water*** is the water in soils and aquifers.

Technically, the term *nonpoint source* is defined to mean any source of water pollution that does not meet the legal definition of *point source* in section 502(14) of the CWA of 1987:

> *The term "point source" means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural storm water discharges and return flows from irrigated agriculture.*

Although diffuse runoff is usually treated as nonpoint source pollution, runoff that enters and is discharged from conveyances like those described above is treated as a point source discharge. Point sources typically enter receiving water bodies at some identifiable site, such as the end of a pipe, and they are usually the result of a discharge from some industrial process or construction activity, not rain or snowfall. The distinction between point and nonpoint sources of pollution is an important one because point source discharges such as municipal and industrial wastewaters and storm sewer outfalls from urbanized areas are regulated and issued permits under the CWA, whereas nonpoint sources are not subject to federal permit requirements.

Watershed Approach to Nonpoint Source Pollution Control

Marinas, by nature of their business, are positioned in a *watershed*, where the activities of others in the watershed affect water quality in the marina basin. Water quality at any specific point along a river is influenced by all upstream and upgradient locations in the river's watershed. Marinas located on rivers and reservoirs are potential recipients of the runoff from sources located upstream and along upstream tributaries, and from all upgradient land-based activities in the watershed. Lakes are the natural sinks for runoff from activities in their basins, and the water quality in marinas on lakes is potentially influenced by all of the activities in the watershed and activities that occur on the lake. The water quality of marinas in estuaries and coastal areas is similarly influenced by the numerous activities that contribute runoff and pollutants to the water flowing into the marina basin. The runoff from marinas in urban settings is often mixed with runoff from nearby areas because runoff is directed toward the surface waters where marinas are located. Similarly, marinas in watersheds where agriculture is abundant may receive a lot of runoff from upland agricultural sources.

Marinas can benefit from cooperative environmental protection efforts that involve and educate those who potentially contribute pollutants to the surface waters in the watershed where the marina is located and seek responsible, shared solutions to water quality problems.

Since 1991 EPA has promoted the watershed protection approach as a comprehensive framework for addressing complex pollution problems, such as those from nonpoint sources within a defined geographic area. The watershed protection approach is not a new centralized government program. It is a flexible framework for focusing and integrating current environ-

> ***Watersheds*** are areas of land that drain to a single stream, lake, or other water resource. Watersheds are defined solely by drainage areas and not by land ownership or political boundaries.

mental protection efforts and for exploring innovative methods to achieve maximum efficiency in using resources and obtaining positive environmental effects.

The watershed protection approach is a comprehensive planning process that considers all natural resources in a watershed, as well as social, cultural, and economic factors (Figure 1-1). The process tailors workable solutions to ecosystem needs through the participation and leadership of stakeholders.

Although watershed approaches might vary in terms of specific objectives, priorities, elements, timing, and resources, all should be based on the following guiding principles:

- *Partnerships*: People affected by management decisions are involved throughout and help shape key decisions. Cooperative partnerships among federal, state, and local agencies; Indian tribes; and nongovernmental organizations with interests in the watershed are formed. This approach ensures that environmental objectives are well integrated with those for economic stability and other social/cultural goals of the area. The approach also builds support for action among the people who are economically dependent on the natural resources of the area.

  Watershed projects typically involve state environmental, public health, agricultural, and natural resources agencies; local and/or regional boards, commissions, and agencies; EPA waterand air programs; other federal agencies; private wildlife and conservation organizations; industry sector representatives; and the academic community.

- *Geographic focus*: Resource management activities are coordinated and directed within specific geographic areas, usually defined by watershed boundaries, areas overlying or recharging ground water, or a combination of both. Watershed projects encompass all or most of the landscape in a well-defined watershed or other ecological, physiographic, or hydrologic unit, such as an embayment, an aquifer, or a lake and its drainage area.

- *Sound management techniques based on strong science and data*: Collectively, watershed stakeholders employ sound scientific data, tools, and techniques in an

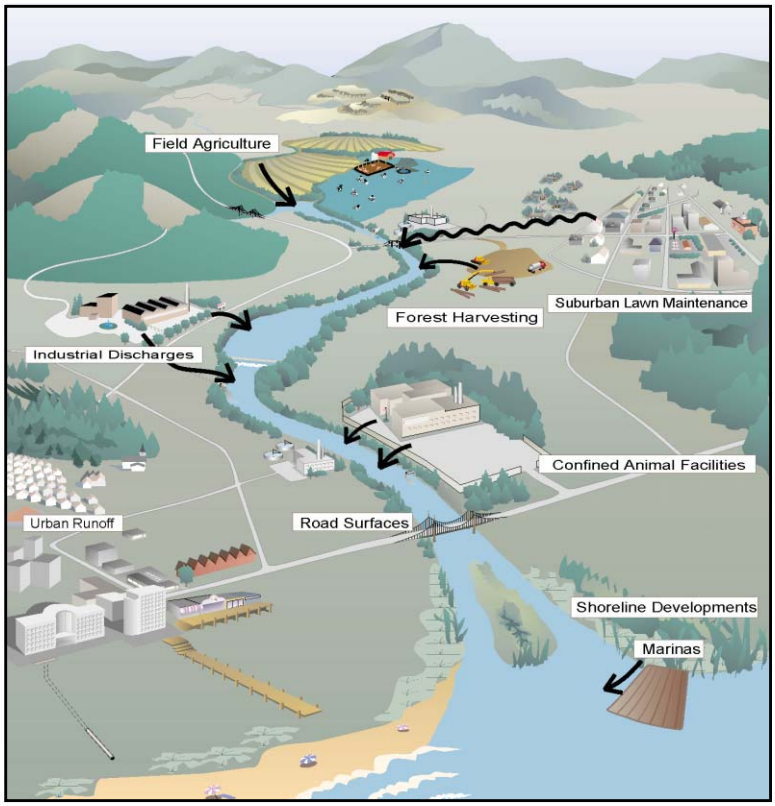

Figure 1-1. Schematic of a watershed. Sources of pollutants from throughout the watershed are carried downstream in surface water runoff and ground water flow. The watershed approach involves examining all pollution problems in the watershed, setting priorities, and taking an integrated approach to addressing the problems.

iterative decision-making process. Typically, this process includes:

– Assessment and characterization of the natural resources in the watershed and the people who depend on them.

– Goal setting and identification of environmental objectives based on the condition or vulnerability of resources and the needs of the aquatic ecosystem and the people. Well-defined goals and objectives are established for the watershed, including objectives for chemical water quality (e.g., reduced toxicity), physical water quality (e.g., temperature, flow, circulation), habitat quality (e.g., channel morphology, health of biotic communities), and biodiversity (e.g., species number, range, replacement of exotic species with native species).

– Identification of priority problems. Watershed projects identify the most significant threats to water quality, based on a comparative risk analysis of the potential human health, ecological, and economic impacts. The resources of the participants in a watershed project are then targeted in a coordinated fashion toward the high-risk problems.

– Development of specific management options and action plans. Based on the priorities that have been set, integrated action plans that will achieve the goals and objectives of the watershed protection project are devised.

– Implementation, evaluation, and revision of plans as needed. All appropriate authorities and techniques are employed to achieve the goals and objectives set forth in the action plans. Normally, existing programs of local, state, and federal agencies; private environmental and civic groups; and industries and corporations form the basis of the framework for implementation of the action plans. These separate efforts are merely coordinated and redirected to work together more efficiently to achieve common goals. Cost savings due to this coordination of efforts are often realized by the participants.

- *Getting Organized*: Working as a task force, stakeholders reach consensus on goals and approaches for addressing a watershed's problems, the specific actions to be taken, and how those actions will be coordinated and evaluated. Coordinated action can be taken in areas such as voluntary pollution prevention (BMP installation) and source reduction (waste minimization).

Programs to Control Nonpoint Source Pollution

Several federal laws and programs that address nonpoint source pollution in one form or another are in effect. The most important ones are discussed below.

National Nonpoint Source Pollution Control Program

During the first 15 years of the federal water pollution control program to abate and control water pollution (1972–1987), EPA and the states focused most of their water pollution control activities on industrial and municipal wastewater point source discharges. They regulated point sources through the National Pollutant Discharge Elimination System (NPDES) permit program established by section 402 of the 1972 Federal Water Pollution Control Act (Clean Water Act). Discharges of dredged and fill materials into wetlands were also regulated by EPA and the U.S. Army Corps of Engineers under section 404 of the CWA.

As a result of these activities, by the mid-1980s pollutant loads from point source discharges had been greatly reduced and considerable progress had been made in restoring and maintaining water quality. However, the gains made in controlling point sources had not achieved the desired level of water quality improvement. Recent studies and surveys by EPA and by state water quality agencies indicate that most of the remaining water quality improvement impairments in rivers, streams, lakes, estuaries, coastal waters, and wetlands result from nonpoint source pollution and other nontraditional sources, such as urban storm water discharges and combined sewer overflows.

In view of the growing national awareness of the now-dominant influence of nonpoint source pollution on water quality, Congress amended the CWA in 1987 to focus pollution control efforts on nonpoint sources. The amended CWA added a fundamental principle to section 101, "Declaration of Goals and Policy":

> *It is the national policy that programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner so as to enable the goals of this Act to be met through the control of both point and nonpoint sources of pollution.*

Supporting the section 101 Declaration, Congress enacted section 319 in the 1987 act, which established a national program to control nonpoint sources of water pollution. Under section 319, states, territories, and Indian tribes address nonpoint source pollution by assessing the problems and causes of nonpoint source pollution and implementing management programs to control them. Section 319 authorizes EPA to issue grants to states and tribes to assist them in implementing management programs or the portions of management programs that have been approved by EPA. In 1990–2001, EPA awarded more than $1.3 billion in section 319 grants to help states, territories, and tribes implement their nonpoint source programs.

Further information about nonpoint source pollution control is available at EPA's web site, http://www.epa.gov/owow/nps.

Storm Water Permit Program

The CWA prohibits the discharge of any pollutant to waters of the United States from a point source unless the discharge is allowed under a National Pollutant Discharge Elimination System (NPDES) permit. The NPDES permitting program is designed to track classes of point source discharges, monitor the discharge of pollutants from specific sources to surface waters, and require the implementation of the controls necessary to minimize the discharge of pollutants.

As pollution control measures for industrial and municipal wastewater sources were implemented and refined, studies showed that storm water runoff draining large surface areas, such as agricultural and urban land, was also a significant cause of water quality impairment.

In 1987 Congress amended the CWA to require implementation of a comprehensive national program for addressing problematic nonagricultural sources of storm water discharges. As required by the amended CWA, the NPDES Storm Water Program is implemented in two phases:

- Phase I requires permits for separate storm water systems serving large- and medium-sized communities (those with more than 100,000 inhabitants) and for storm water discharges associated with industrial and construction activity involving at least 5 acres (see Title 40 of the Code of Federal Regulations [CFR], Part 122).
- Phase II addresses urban areas with populations of less than 100,000; construction sites of 1 to 5 acres; and retail, commercial, and residential activities.

Further information is available on EPA's NPDES Storm Water Program web page, http://www.epa.gov/owm/npdes.htm.

Information on the applicability of the Storm Water Permit Program to marinas is provided in Section 4.5.

Coastal Nonpoint Pollution Control Program

In November 1990 Congress enacted CZARA. The amendments were intended to address the impacts of nonpoint source pollution on coastal water quality. Section 6217, "Protecting Coastal Waters" (codified as 16 U.S.C. section 1455b), provides that each state with an approved Coastal Zone Management Program must develop and submit a Coastal Nonpoint Pollution Control Program to EPA and the National Oceanic and Atmospheric Administration (NOAA) for approval. Section 6217 required NOAA to recommend and states to determine the geographic area in each coastal state within which land and water uses have a significant effect on coastal water quality, and states are to implement control measures

within this 6217 management area, or coastal management area.

Coastal Nonpoint Pollution Control Programs are not intended to supplant existing Coastal Zone Management Programs and Nonpoint Source Management Programs. Rather, they are to serve as an update and expansion of existing nonpoint source management programs in the 6217 management area and are to be coordinated closely with the Coastal Zone Management Programs that states and territories are already implementing. The legislative history indicates that the central purpose of section 6217 is to strengthen the links between federal and state coastal zone management and water quality programs and to enhance state and local efforts to manage land use activities that degrade coastal waters and habitats.

Section 6217(g) of CZARA required EPA to publish, in consultation with NOAA, the U.S. Fish and Wildlife Service, and other federal agencies, "guidance for specifying management measures for sources of nonpoint pollution in coastal waters." EPA published *Guidance Specifying Management Measures for Sources of Nonpoint Source Pollution in Coastal Waters* in 1993. In that document, CZARA management measures and BMPs were defined and described for marinas and recreational boating, as well as for urban development, agriculture, hydromodification and wetlands, and forestry.

Further information on CZARA and coastal nonpoint source pollution control can be found at the EPA web site for CZARA and section 6217: http://www.epa.gov/owow/czmact.html.

Clean Vessel Act Pumpout Grant Program

The Clean Vessel Act (CVA) Pumpout Grant Program makes matching grants available, through a competitive process, to all states and territories for construction and education efforts and to coastal states (excluding Alaska) to conduct surveys and develop plans for the installation of pumpouts for onboard sewage holding tanks. States match grant funds at a 3:1 (federal-to-state) ratio. The program benefits boaters, who will have more numerous and convenient pumpout facilities to use as a result of the program, and the public and environment as a whole through reductions of disease-carrying microorganisms contained in sewage discharges and improvements in dissolved oxygen concentrations. Further information is available at http://fa.r9.fws.gov/cva/cva.html.

International Convention for the Prevention of Pollution from Ships (MARPOL)

The International Convention for the Prevention of Pollution from Ships, known as MARPOL 73/78 (for Marine Pollution) is an internationally accepted treaty that, together with U.S. laws and regulations, sets out operational waste discharge requirements for ships. MARPOL 73/78 contains five annexes designed to reduce marine pollution by controlling or prohibiting discharges of harmful substances from ships (see box). It covers intentional and accidental discharges of wastes of all kinds from vessels and applies to ports, terminals, and marinas as well. The United States is signatory to MARPOL 73/78 and Annexes I, II, III, and V; Annex IV is not currently in force internationally.

MARPOL 73/78 ANNEXES

Annex I:	Oil
Annex II:	Noxious liquid substances in bulk
Annex III:	Harmful substances carried in package form
Annex IV:	Sewage
Annex V:	Garbage and all other ordinary ship-generated solid and liquid waste not covered by Annexes I, II, III, and IV

In the United States, MARPOL 73/78 is implemented through the Act to Prevent Pollution from Ships of 1980, as amended. The U.S. Coast Guard is responsible for promulgating regulations and enforcing the treaty. Regulations for ships are included in 33 CFR Part 151; those for port reception facilities are included in 33 CFR Part 158.

MARPOL 73/78 Annex V is implemented in the United States by the Marine Plastic Pollution Research and Control Act (MPPRCA) of 1987, Title II of Public Law 100-220. Annex V prohibits disposal of plastics at sea and restricts at-sea disposal of other vessel-generated trash. It also requires shore reception facilities for the plastics and other trash brought to shore for disposal. Recreational boating facilities, along with other ports and terminals, are required to have a trash reception facility that is capable of receiving trash from those vessels that do business with them (33 CFR Part 158). Vessels 26 feet or longer must display a placard that explains MARPOL 73/78 Annex V ocean disposal regulations (Figure 1-2).

Oil Pollution Act (OPA) and Regulations

The Oil Pollution Act (OPA) is a comprehensive prevention, response, liability, and compensation regime for dealing with vessel- and facility-generated discharges of oil or hazardous substances. Under the OPA, any hazardous waste spill from a vessel must be reported by the owner of the vessel and vessel owners are responsible for any costs of a resulting environmental cleanup and any damage claims that might result from the spill. Marinas are responsible for any oil contamination resulting from their facilities, including dumping or spilling of oil or oil-based paint and the use of chemically treated agents.

The OPA also requires Area Committees to prepare an Area Contingency Plan for approval by EPA and the Coast Guard. An Area Contingency Plan provides details of how to respond to a spill within a specific geographic area. Marinas are subject to a broader range of claims and liability than vessel owners, and marina owners should consult their Area Contingency Plan for proper remedial actions.

There are other laws that relate directly and indirectly to marinas and recreational boating. The major tenets of those laws are presented in Appendix D and on EPA's web site at http://www.epa.gov/oilspill.

Sources of Further Information

Other information about nonpoint source pollution and its control can be accessed at the Office of Wetlands, Oceans, and Watersheds page of the EPA web site, http://www.epa.gov/owow.

USCG. 1994. *Managing Waste at Recreational Boating Facilities*. U.S. Coast Guard, Marine

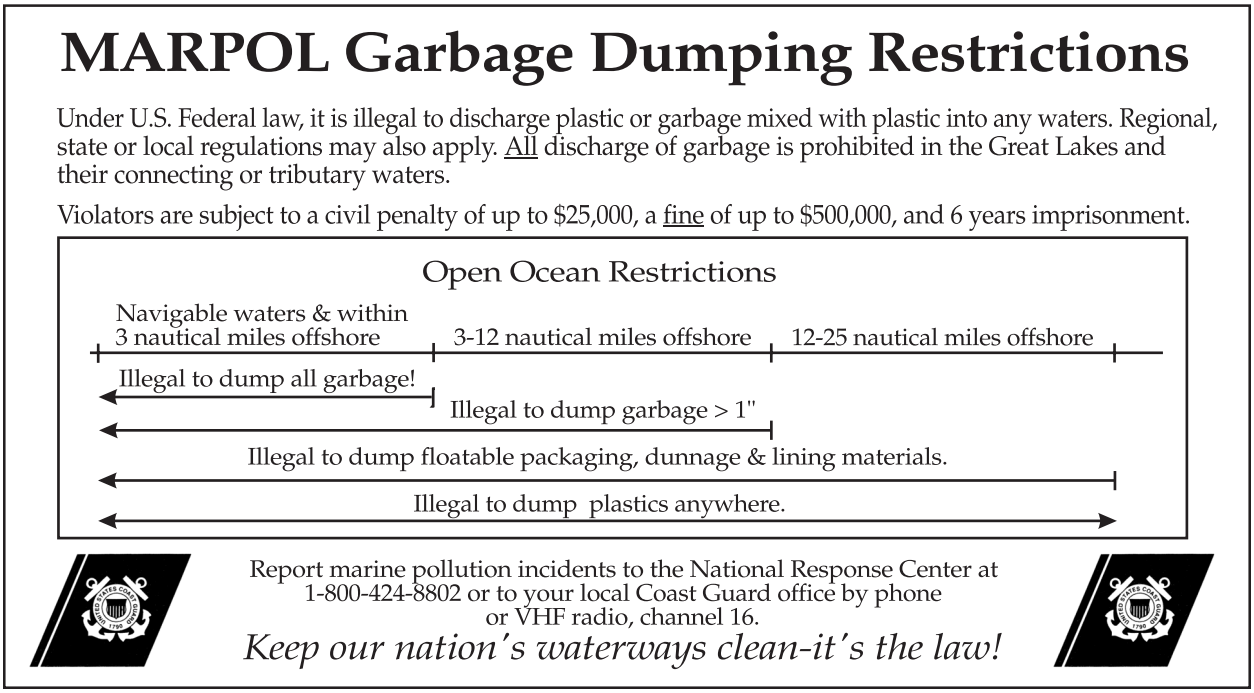

Figure 1-2. MARPOL placard

Environmental Protection Division, Environmental Coordination Branch, Washington, DC. April.

USEPA. 1993. *Guidance specifying management measures for sources of nonpoint pollution in coastal waters*. EPA 840-B-92-002. U.S. Environmental Protection Agency, Office of Water, Washington, DC. January.

USEPA. 1996. *Clean Marinas—Clear Value: Environmental and Business Success Stories*. EPA 841-R-96-003. U.S. Environmental Protection Agency, Office of Water, Washington, DC. August.

USEPA and USDOC. 1993. *Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance*. U.S. Environmental Protection Agency, Office of Water, Washington, DC, and National Oceanic and Atmospheric Administration, Washington, DC. January.

Watershed Resources

EPA's Surf Your Watershed web site offers a Web-based source of information about watersheds throughout the United States. The site contains information about watershed size, pollutants, stressors, and condition. Access information for any watershed in the nation by clicking on maps at http://www.epa.gov/surf.

USEPA. 1991. *The Watershed Protection Approach*. EPA/503/9-92/002. U.S. Environmental Protection Agency, Office of Water, Washington, DC. December.

USEPA. 1995. *Watershed Protection: A Project Focus*. EPA841-R-95-003. U.S. Environmental Protection Agency, Office of Water, Washington, DC. August.

USEPA. 1997. *Top 10 Watershed Lessons Learned*. EPA840-F-97-001. U.S. Environmental Protection Agency, Office of Water, Washington, DC. October. [This document discusses some very important lessons in ensuring the success of watershed protection projects, gained from experience with the watershed approach for addressing environmental problems. The document contains case studies of watershed projects that have been implemented throughout the country and lists of contacts for further information and technical assistance. It is available at http://www.epa.gov/owow/lessons.]

Other references and information on organizations related to pollution prevention in marinas can be found in the bibliography and Appendix E. Other information about nonpoint source pollution and its control can be found at the EPA Office of Wetlands, Oceans, and Watersheds web page: http://www.epa.gov/owow.

SECTION 2: SOURCES OF WATER POLLUTION FROM MARINAS AND RECREATIONAL BOATING

Section 2 Contents

Marinas are not reported by states, territories, or tribes to be a major source of nonpoint pollutants that contribute to poor water quality, as are sources such as agriculture and urban areas, though the location of marinas at the water's edge can lead to their being affected by other pollutant sources. Pollutants from upstream point and nonpoint sources in a watershed might flow to a marina's waters, adding to any nonpoint pollutants released at the marina itself. Water quality in a marina, therefore, is often a reflection of not only nonpoint source pollutants generated at the marina but also a cumulative load of pollutants from several watershed sources. Awareness of the potential for the generation of nonpoint source pollution at a marina and of how to use management measures and site-specific BMPs to reduce nonpoint source pollution is important to ensuring the best possible water quality in a marina basin. This section of the guidance describes the pollutants that can be generated at a marina and their potential effects on water quality and aquatic life.

The construction of a marina can create a condition of reduced water circulation. Installing structures such as bulkheads and jetties, which are necessary to ensure the safety of vessels, docks, and shoreside structures, can cause water circulation in the basin to be below what it was before the marina's construction. In an area already protected from wave action, such as a cove or inlet, marinas can potentially introduce pollutants to an area with limited natural circulation or water exchange. Over time, reduced circulation and increased pollutant generation can increase pollutant concentrations in the water column, sediments, and aquatic organisms.

The pollutants that might be generated at a marina and enter a marina basin include nutrients and pathogens (from pet waste and overboard sewage discharge), sediments (from parking lot runoff and

shoreline erosion), fish waste (from dockside fish cleaning), petroleum hydrocarbons (from fuel and oil drippings and spills and from solvents), toxic metals (from antifoulants and hull and boat maintenance debris), and liquid and solid wastes (from engine and hull maintenance and general marina activities). The effects of these pollutants on waterways and aquatic plants and animals are discussed in this section. Marina construction and reconstruction, in-water modifications at marinas, and propeller wash and boat wakes can also disturb aquatic habitats, plants, and animals.

Although nonpoint source pollution is a serious problem nationally, more is always being learned about effective ways to prevent and reduce it. The purpose of this section is to describe the general causes of nonpoint source pollution, the specific pollutants and problems of concern, and the general approaches to reducing the impact of pollutants and other problems on aquatic resources as these relate to marinas and recreational boating. Figure 2-1 illustrates the general types of problems that various pollutants can cause in aquatic systems.

Pollutant Types and Impacts

Marina construction can alter habitats at a site. Shoreline vegetation may be reduced at some locations. Bottom sediments may be stirred up more frequently with boating activity and dredging to maintain channel and basin depth. These kinds of alterations can have both negative and positive effects. For example, installation of marina pilings and bulkheads introduces a hard-surfaced habitat into a marina that previously might have been dominated by a soft-bottomed habitat of mud and silt. Organisms that prefer rocks and other hard surfaces (fouling organisms) will colonize this new habitat and in turn may attract other invertebrates and juvenile fish to the area.

The fact that a marina is present does not mean that water quality is poor. Many marinas have good to excellent water quality. Despite this, their aquatic habitats might not be healthy enough to support a natural diversity of aquatic organisms, and they might still have sediments contaminated by pollutants from storm water runoff or by antifoulants that have leached from ship hulls or piers.

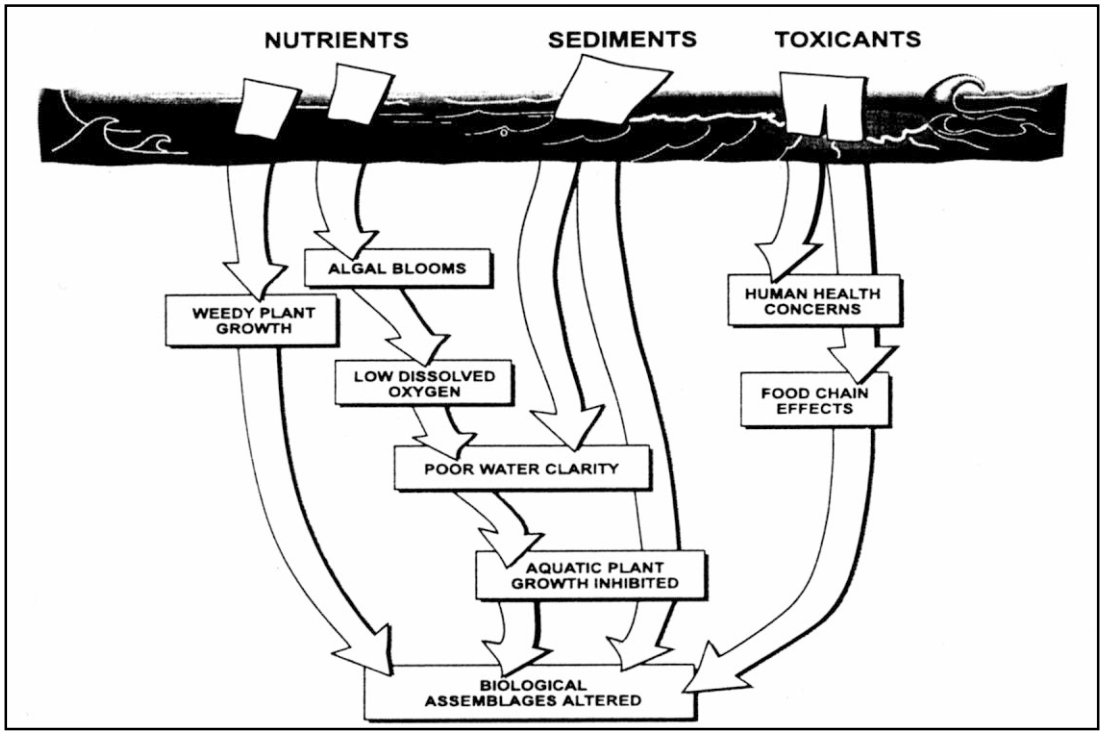

Figure 2-1. Effects of pollutants in aquatic systems.

Pollutants in the Water Column

Pollutants from marinas can cause pollution problems in the water column. These problems usually take the form of decreased levels of dissolved oxygen and increased levels of metals and petroleum hydrocarbons. Pollutants that cause these problems get into the water through storm water runoff, discharges from boats, and spills of fuel or bilge water.

Low Dissolved Oxygen

The organic matter in materials such as sewage discharged from recreational boats, trash tossed into surface waters or on the ground, pet waste carried to waterbodies in storm water runoff, and fish waste disposed of into surface waters consumes dissolved oxygen as it decomposes. The amount of dissolved oxygen required to decompose sewage and other organic matter is measured as the "biological oxygen demand" (BOD) of a waterbody. Consumption of oxygen by decomposing organic matter leaves less oxygen for fish, crabs, clams, and other aquatic organisms. Very low levels of dissolved oxygen can result when water temperatures are high (because hotter water holds less oxygen), which is often the case during the peak summer boating season. Decreases in dissolved oxygen in several northwestern marinas have been noted in the late summer and early fall, the peak times of marina use. An intensive study in several North Carolina marinas showed large differences in dissolved oxygen concentrations in the marinas compared to the concentrations in the adjacent waterbodies, with concentrations in the marinas being much lower.[1] These low concentrations of dissolved oxygen were thought to be due to high biological oxygen demand in the marina basins (due to unknown causes) and poor flushing.

Metals

Metals and metal-containing compounds have many functions in boat operation, maintenance, and repair. Arsenic is used in paint pigments, pesticides, and wood preservatives. Zinc anodes are used to deter corrosion of metal hulls and engine parts, and zinc is often a constituent of motor oil and tires. Copper is used as a biocide in antifoulant paints. Chromated copper arsenate (CCA) is used in wood as a preservative. Mercury is contained in many float switches for bilge pumps and shower water storage tank pumps and in air conditioning/heating thermostats. These switches can contain as much mercury as 100 fluorescent lamps. Nickel is a component of brake linings and pavement material, and cadmium is present in batteries and brake linings. These and other metals (aluminum, iron, and chromium) are used in various components used at marinas or by recreational boaters and can wash from parking lots, service roads, and launch ramps into surface waters with rainfall. High levels of zinc, chromium, and lead have been detected in the waters of some marinas.

Many of the antifoulants used for barnacle control in marine waters are used in fresh waters as well. Copper is the most common metal found at toxic concentrations in marina waters.[2] Dissolved copper has been detected at toxic concentrations at several marinas within the Chesapeake Bay.[3] Copper is leached to surface waters and sediments from bottom paints and scrapings. Tin in the form of butyltin, an extremely potent and non-specific biocide, has been detected at toxic levels in marina waters nationwide.[4] The use of butyltins in bottom paint is now restricted to paints with release rates of 4.0 micrograms per square centimeter or less and on vessels larger than 25 meters (82 feet) in length and on aluminum-hulled vessels regardless of size. Although butyltins are no longer used on most boats, the years of their use in antifoulants has left areas of low to high concentrations of these compounds in sediments. Disturbance of the sediments can reintroduce the toxic compounds into the water column, where they can be ingested by fish or other aquatic organisms and in turn by people.

[1] NCDEM, 1990.

[2] NCDEM, 1990, 1991; METRO, 1992.

[3] Hall et al., 1987.

[4] Grovhoug et al., 1986; Maguire, 1986; Stephenson et al., 1986; Stallard et al., 1987.

Petroleum Hydrocarbons

Sources of hydrocarbons at a marina include fueling stations; operation, maintenance, and repair of boat engines; and storm water runoff from the marina property and off-site upland areas. Petroleum hydrocarbons are contained in fuel, oil, grease, lubricants, finishes, and cleansers. Petroleum can be spilled directly into surface waters when fuel drips from fueling nozzles or a fuel tank is overfilled at a dock. Older 2-stroke marine engines discharge unburnt fuel and oil directly to the atmosphere and surface waters while they are operating. Oil, fuel, paint, anti-freeze, or other liquids dripped from engines or paint brushes or spilled while draining oil or fuel from engines enter surface waters indirectly with storm water runoff or in flows of ground water after the substances have seeped into the ground. Rainwater washes anything dripped, spilled, deposited, or disposed of from building roofs, parking areas, boat ramps, and maintenance areas on the marina property and nearby properties to the nearest downstream surface water, which is often the marina basin.

Solvents

Solvents like methylene chloride, tetrachloro-ethane, trichloroethene, and trichlorethylene are contained in degreasing agents, varnishes, paint removers, and lacquers. They are used at marinas for engine maintenance and repair activities and vessel painting and cleaning. If not properly contained, solvents can potentially enter marina waters through surface water runoff or through ground water transport from hull maintenance areas. Solvents are stable compounds that are insoluble in water, which makes them very mobile in ground water. They are usually heavy, long-chain organic compounds, so they sink to an impermeable bottom layer in the ground (like bedrock) and accumulate. Many solvents are known cancer-causing compounds (carcinogens).

Antifreeze

Antifreeze is used at marinas in dry storage of boats and engine maintenance. It contains either ethylene glycol or propylene glycol. Propylene glycol antifreeze is reported to be much less toxic to aquatic organisms than ethylene glycol and is therefore preferred for use in boats. Both types of antifreeze, however, are considered toxic and should be poured, stored, and drained carefully to avoid spillage. Used antifreeze should be taken to a hazardous waste collection center and recycled if possible.

Acids

Batteries contain battery acid, which is very corrosive and toxic and often contains high levels of toxic metals like lead. Cleaning compounds and detergents often contain strong acids or lye. These materials can be washed into the marina basin with the next rain along with the petroleum hydrocarbons, solvents, paint chips, and other material spilled on the ground. Many hazardous waste collection stations accept used batteries.

Surfactants

Surfactants are compounds used in detergents and other cleaning agents to reduce surface tension. Some are known to be very deadly to aquatic organisms. Surfactants can also accumulate at the water surface and create a barrier against the transfer of dissolved oxygen across the air-water interface, resulting in lowered dissolved oxygen concentrations in the water. For these reasons, surfactants are best not used on boats that are in the water or on upland areas where runoff washes into surface waters.

Pollutants in Aquatic Organisms

Many aquatic organisms feed by sifting through sediments or eating organisms that filter food particles out of the water. The aquatic organisms thus ingest any pollutants attached to or mixed in with the sediments or suspended particles. The pollutants they ingest accumulate in their tissues rather than being excreted. When many smaller organisms, each of which has accumulated some pollutants in its tissues, are eaten by an organism higher in the food chain (for instance, a fish), that organism then accumulates in its tissues all of the pollutants accumulated by the lower organisms. This process, called bioaccumulation, is the reason that very small quantities of pollutants in the water column can result in dangerous concentrations of pollutants in fish, oysters, and other aquatic

organisms. Numerous studies conducted from the late 1970s through early 1990s have demonstrated this effect and, in particular, the effect on marinas when proper pollution prevention is not practiced.[5] Copper and zinc have been found at higher concentrations in oysters from marinas than in oysters from sites outside marinas; higher-than-normal concentrations of copper, cadmium, chromium, lead, tin, zinc, and PCBs have been found in mussels from marina waters; after 3 months, concentrations of lead, zinc, and copper were two to three times higher in oysters transplanted to marinas than in oysters left outside marinas; and concentrations of copper in green algae and fouling organisms (barnacles, etc.) were much higher in a marina area than in adjacent areas.

Pollutants in Sediments

Many contaminants generated from boat maintenance and general marina use (e.g., oil and grease drippings from cars) do not dissolve well in water and accumulate to higher concentrations in sediments than in the overlying water. Contaminated sediments may, in turn, act as a source from which these contaminants can be released into overlying waters. Benthic organisms—those organisms that live on the bottom or in the sediment—are exposed to pollutants that accumulate in sediments. Pollutants ingested by these organisms become increasingly concentrated in animal tissue as the pollutants are passed up the food chain, and thus can reach levels dangerous for human consumption. Many fish advisories are issued for this reason.

Metals

Copper is the major contaminant of concern in sediments because many common antifouling paint preparations contain cuprous oxide as the active biocide component.[6] In most cases metals tend to sink and accumulate in sediments and not stay in the water column, though they do attach to small suspended particles and can be distributed in the water column with these particles. When attached to suspended particles, metals are often associated with small particles, so they settle out of the water column slowly and are mixed upward easily. In marinas, higher levels of some metals (such as copper and lead) have been found near maintenance area drains and fuel docks than at other locations, suggesting that maintenance areas and fueling stations are sources of metals to the water and good targets for pollution prevention practices.[7]

Petroleum Hydrocarbons

Petroleum hydrocarbons, particularly polynuclear aromatic hydrocarbons (PAHs), tend to attach to suspended particles and sediments. Because they can stay in sediments for years, they can be ingested by mussels, oysters, or other bottom-dwelling organisms long after they are spilled or washed into the water. Studies have found high concentrations of petroleum hydrocarbons in marinas, though the studies have also found that concentrations of these compounds are much lower in the sediments of well-flushed marinas.[8] Such findings support the supposition that sufficient flushing in a marina basin is important to prevent a buildup of pollutants in marina sediments.

Pathogens

Studies that have attempted to determine whether there is a correlation between boating density and pathogen (fecal coliform) concentrations in lakes and reservoirs are divided in their conclusions. Pathogens are added to surface waters by wildlife, dogs and cats, seeping septic tanks, and combined sewer outfall overflows, and these sources could have a larger impact than boaters on pathogen concentrations. Some violations of health standards for fecal coliform bacteria (the bacteria found in human and animal wastes) have been related to periods of high-intensity recreational use, such as holiday weekends. These violations could be due to either boater discharges

[5] CARWQCB, 1989; Marcus and Stokes, 1985; McMahon, 1989; NCDEM, 1991; Nixon et al., 1973; SCDHEC, 1987; Wendt et al., 1973; SCDHEC, 1987; Wendt et al., 1990; Young et al., 1979.

[6] METRO, 1992.

[7] McMahon, 1989; NCDEM, 1991; Soule et al., 1991.

[8] Marcus et al., 1988; McMahon, 1989; NCDEM, 1990; Voudrias and Smith, 1986.

or sediments where pathogens are concentrated being stirred up, or both.

Studies conducted in Puget Sound, Long Island Sound, Narragansett Bay, North Carolina, and Chesapeake Bay have shown that boats can be a source of fecal coliform bacteria in areas with high boat densities and poor flushing.[9] Human health problems can result, especially if nearby waters are used for swimming, surfing, wind surfing, water skiing, or other recreational activities that involve significant water contact.

Bacterial and viral contamination of waters can result from improper use of marine sanitation devices (MSDs). If a vessel has an installed toilet, the law requires that it be equipped with an MSD. Incorrect configuration of the toilet and MSD can lead to direct discharge of waste to surface waters. Discharge of the contents of portable toilets to surface waters also results in contamination. Boats with portable toilets are not required to have MSDs, and their contents should be disposed of at a sanitation facility.

Currently a number of states have designated all or nearly all of their surface waters as no discharge zones (NDZs). These states include Michigan, Missouri, New Hampshire, New Mexico, Rhode Island, and Wisconsin. Boats on fresh waters in New Hampshire, Missouri, and New Mexico must be configured such that wastes cannot be discharged directly into the water (i.e., Y-valves must be disabled), and boats may be inspected to see that this requirement is met. In addition, other states have segments of their surface waters designated as NDZs. These states include California, Florida, Georgia, Massachusetts, Minnesota, New Jersey, Nevada, New York, South Carolina, Texas, and Vermont. NDZs are approximately evenly divided (in number of areas designated) between fresh waters and marine or estuarine waters. A no-discharge policy is also in effect on all Army Corps of Engineers reservoirs.

[9] Fisher et al., 1987; Gaines and Solow, 1990; Milliken and Lee, 1990; NCDEM, 1990; Sawyer and Golding, 1990; Seabloom et al., 1989.

Debris and Litter

The numerous activities that occur at marinas—vessel and engine repair and maintenance, recreation on and off boats, fueling, dock maintenance, and building and grounds maintenance—are sources of a variety of debris and litter. Paper towels and cups, plastic bags, plastic and glass bottles, fish netting, fishing line, discarded oil filters and engine parts, discarded rags, debris from sanding or pressure washing, pet droppings, aluminum cans, and other forms of trash all find their way into surface waters if not disposed of properly. Coastal cleanups result in the collection of millions of pounds of trash and debris from U.S. coasts annually. The most common items found along the nation's coasts are cigarette butts, plastic pieces, foamed plastic pieces, plastic food bags/wrappers, plastic caps/lids, paper pieces, glass pieces, plastic straws, metal beverage cans, glass beverage bottles, plastic beverage bottles, and foamed plastic cups. These wastes are dangers to marine animals, which can die from becoming entangled in items like fishing nets and lines and from ingesting small pieces of debris that are mistaken for food. The trash and debris are dangerous to people visiting the coasts, who might accidentally step on discarded items, injure themselves, and risk infection. They are also unnatural, unsightly additions to the coastal landscape.

Sediment and Habitat Alterations

Dredging can disturb aquatic habitats; resuspend bottom sediments (and recirculate toxic metals, hydrocarbons, pathogens, and nutrients that are found in sediments into the water column); and increase turbidity, which reduces sunlight available to algae and aquatic vegetation. Increased turbidity lowers the rate of photosynthesis and decreases the rate at which dissolved oxygen is added to the water. Because dredging usually occurs over a short time period and then ceases, impacts that result from it, such as turbidity and dissolved oxygen reductions, are usually temporary and do not have long-term negative effects. Other consequences of dredging, such as habitat disruption and deterioration, can have lasting impacts.

Boat operation can cause these same problems in the water column and for aquatic organisms by disrupting shallow habitats and communities and mixing nearshore sediments into the water column.[10] Propeller-driven boats operated too fast near the shoreline can cause bank erosion.[11] Shallow waterways can be affected by propellers cutting off or uprooting aquatic plants from the bottom and propwash mixing sediments into the water.[12] The latter not only reduces photosynthesis, but also can interfere with fish and other sight-feeding animals, clog fish gills, and smother plants and animals.

The effect that boat traffic and motor operation can have on water quality and biological communities in lakes, reservoirs, rivers, and estuaries varies and depends on the characteristics of the waterbody and the type of watercraft being operated on it.[13] The effects are most acute in soft-bottomed lakes and reservoirs, quiet side channels of rivers and streams where fine sediment accumulates because of the lack of strong currents, and waterbodies that have sediments rich in nitrogen and phosphorus.

The impact of boats on rooted plants depends on the depth of the plants below the surface. Where submerged aquatic vegetation (SAV) occurs in shallow areas, boats passing through the area can create troughs where the vegetation is eliminated or severely reduced. Most direct effects of motorboats on submerged aquatic vegetation take place in water less than 5 feet deep, and motorboats can effectively remove all rooted vegetation in water less than 3 feet deep, especially in areas with sandy sediments. Recovery of submerged aquatic vegetation beds can take years, and loss of vegetation can lead to increased erosion and invasion by other species. Submerged aquatic vegetation protects shorelines from erosion and is an important resource for many aquatic organisms because it provides food and shelter.

Larval and juvenile fish can be killed directly by boat propellers and propeller wash. Spawning or nesting fish can be disturbed, and propeller wash can be powerful enough to destroy fish eggs. Fish populations can be lowered if survival of young-of-the-year fish is diminished and reproductive success is lowered. Manatees and other aquatic animals that swim near the water surface also suffer from propeller strikes. Many manatees in Florida bear the scars of propeller cuts.

Shoaling and Shoreline Alterations

Shoaling and shoreline erosion result from the physical transport of sediment caused by waves and currents. These waves and currents can be natural (wind-induced, rainfall runoff, etc.) or human-induced by boat wakes or in-water structures that change currents or reflect waves.

When waves caused by passing vessels or reflected from breakwaters reach the shallow margins of a waterway, they can erode banks and nearby bottom sediments. This effect tends to wash away plants loosely rooted in sediments near the shore and the associated animal life. A substantial volume of the sediment that causes shoaling is eroded from banks, and removing this material by dredging is a costly recurrent expense. Frequent dredging can be necessary where boat traffic causes extensive bank erosion. No wake zones and travel lanes located away from shorelines can reduce and help prevent bank erosion and shoaling. There is a direct relationship between factors such as the distance of a boat from shore, boat speed, slopes of the sides of a bank, type of sediment, and depth of the waterway and the amount of erosion and subsequent shoaling that results. The location of travel lanes should be determined for each specific case with these factors in mind.

The amount of shoreline erosion caused by boat wakes in lakes and reservoirs depends on the same factors as in coastal environments—design features of the boat (size, hull shape, and draft), distance of the boat from the shoreline, water depth, channel width (if the boat is passing through a channel), shoreline soil condition, slope of the shoreline bank, and amount of shoreline vegetative cover. In contrast to coastal environments, in lakes and reservoirs vegetation often grows up to the shoreline, currents are minimal, and there are no tides. Therefore, although boat

[10] Chmura and Ross, 1978.
[11] British Waterways Board, 1983.
[12] USEPA, 1974.
[13] USFWS, 1982.

wakes may be a primary source of erosive energy in lakes with a large amount of boating activity, vegetated shorelines reduce the potential for erosion in lakes. Boat wakes are most likely to cause lake shoreline erosion where the shoreline has been altered and not stabilized and is therefore already susceptible to erosion.

SECTION 3: NONPOINT SOURCE POLLUTION CONTROL AND WATERBODY CHARACTERISTICS

Section 3 Contents

Understanding Management Measures and Practices

Management measures and practices are implemented at marinas primarily to control nonpoint source pollution, which in turn protects water resources and terrestrial and aquatic habitat, enhances the aesthetic appeal of the marina, and protects the marina and the people using it from toxic and harmful substances. The focus of this guidance is on management measures and practices that mitigate the generation of pollutants (using pollution prevention practices) and the delivery of runoff or nonpoint source pollutants (using source reduction practices) to our nation's coastal and fresh waters.

Management measures are defined as

> *economically achievable measures for the control of the addition of pollutants from existing and new categories and classes of nonpoint sources of pollution, which reflect the greatest degree of pollutant reduction achievable through the application of the best available nonpoint source control practices, technologies, processes, siting criteria, operating methods, and other alternatives.*

Marinas and recreational boating management measures contain general management guidelines to prevent or minimize nonpoint source pollution. Individual management practices are not included as part of the statement of the management measures, and states have considerable flexibility in determining *how* they will achieve the management measures.

Best management practices, or BMPs, are used to fulfill management measures. There are two basic types of management practices—*pollution prevention and source reduction*. Pollution prevention practices are practices implemented to prevent the creation or release of pollution into the environment. An example is a vacuum sander that gathers sanding dust before it even has a chance to fall to the ground. Using a nontoxic cleanser in place of a toxic one is another example of pollution prevention. Source reduction controls are practices implemented to gather pollutants that have been released before they can reach the water. They include practices that filter, screen, trap, contain, absorb, chemically neutralize, or divert pollutants before they reach a waterbody or

ground water. An oil/water separator in a storm drain is an example. A tarp under a boat during hull maintenance, with follow-up disposal of all collected debris in a trash receptacle, is another example of source reduction.

Management measures and practices can also be either *structural* (e.g., used oil collection containers, multiple openings to a marina basin) or *managerial* (e.g., pollution control agreements in slip leases, marina policies regarding where boat hull maintenance can be done on the marina property and who is allowed to do it). Individual management practices are not usually sufficient for solving water quality problems but are used in combination to control the diverse potential sources of pollution at marinas. For example, placement of absorbent pads in bilges is a good means to control the release of petroleum-based pollutants, but without storm water runoff controls in parking lots and air/fuel separators to control spillage during refueling, petroleum hydrocarbon pollution in the marina basin is likely.

Management practices are best selected, designed, implemented, and maintained in accordance with site-specific considerations to ensure that the practices function together properly to achieve overall pollution management goals. For example, a grassed drainage swale designed to handle only the quantity of water expected to fall on a parking lot during a design storm will not effectively control pollution if the grassed drainage swale receives runoff from non-marina upland areas as well. When more than one management practice is used to control a type of pollutant from individual or multiple sources, the individual practices will work as a system more effectively if the design standards and specifications of the individual practices are compatible. Additional effectiveness might be achieved if BMPs for a site are selected within the context of an overall watershed protection program. Further information can be found at EPA's watershed protection web site, http://www.epa.gov/owow/watershed.

EPA's management measures for marinas and recreational boating are described in Section 4.

How Management Measures and Practices Work to Prevent Nonpoint Source Pollution

Nonpoint source pollution control management measures and practices are devised to prevent and reduce the introduction of pollutants generated by marina-related activities to the marina basin. Controlling the entry of pollutants into the marina basin helps protect water quality, control aquatic weeds, reduce odors that result from decaying matter, ensure a more attractive and healthy shoreline, maintain water clarity, and allow for the natural ecological processes of the marina basin and surrounding waters to maintain the basin without the need for expensive chemical or mechanical treatments.

Management measures are recommended to control the delivery of nonpoint source pollutants to receiving waters by

- Minimizing pollutants released to the environment during an activity (pollution prevention).
- Preventing the transport and delivery of pollutants by reducing runoff and thus the amount of pollutant transported (source reduction).
- Treating runoff pollution before it is released into surface or ground waters (source reduction).

Management practices are used to control pollutants generated by specific activities. For example, pumpouts, dump stations, and/or restrooms are installed to discourage dumping sewage into waterways and thus to reduce the release of organic materials and pathogens into the water.

Implementing management measures and practices also provides secondary benefits. For example, use of a vacuum-based (often referred to as "dustless") sanding system prevents paint, wood, and fiberglass dust from being blown about and potentially ending up in marina basin waters. It also improves working conditions, protects the health of employees, and reduces post-sanding clean-up work so workers can be more productive. Another example of a management practice that provides environmental benefits beyond those linked to water quality is a grassed drainage swale

surrounding a marina basin. As a runoff pollution control practice, it reduces nutrient and sediment delivery to the basin. It also provides an aesthetic buffer along the water's edge and natural habitat for aquatic plants and animals.

Nitrogen and phosphorus, in both dissolved organic and inorganic forms, are the two principal nutrients that promote plant and algal growth. In general, nitrogen is the limiting nutrient for plant growth (the nutrient whose abundance determines rates of plant growth) in marine ecosystems, and phosphorus is the limiting nutrient in freshwater ecosystems. Both nitrogen and phosphorus can limit plant growth in some estuarine systems, where freshwater and marine ecosystems converge, and both are necessary for the production of phytoplankton, free-floating microscopic algae, and macrophytes (larger floating and rooted plants). When the limiting nutrient is overabundant, phytoplankton, algae, and macrophytes can grow excessively, causing a decrease in water clarity, production of unsightly surface scum, and clogged waterways. All of these conditions are detrimental to marina operations for aesthetic reasons. They are also detrimental for operational reasons: excessive macrophytes can hinder boat passage and entangle propellers and pipelines. As these plants die, their decomposition in the marina basin consumes dissolved oxygen and degrades water quality. In extreme cases, anaerobic, foul-smelling water might result.

For these reasons, controlling the entry of nutrients into the marina basin makes good managerial sense. The marina will be aesthetically more appealing and operationally more functional, and maintenance costs will be kept down by not having to harvest overgrowths of aquatic plants.

Sources of nitrogen and phosphorus at a marina include detergents that contain phosphorus, sewage from boat heads or on-site septic systems, fertilizers used on marina grounds, pet and wildlife waste, and waste from fish cleaning.

The introduction of pathogens into a marina basin due to inadequate sanitation practices is a legitimate cause for concern by marina managers. If the water in a marina basin has elevated levels of fecal coliform bacteria or is contaminated with viruses, marina patrons could be in danger of contracting illness. Insistence that marina patrons use pumpout stations or have a properly operating Type I or II marine sanitation device (MSD) on their vessel can protect the patrons from the dangers of poor sanitation and the marina owner from lawsuits that could result from such incidents. The types of MSDs are described in Table 3-1.

Untreated sewage, pet waste, discarded fish parts, and all forms of litter can add polluting organic matter and debris to a marina basin's water, creating an aesthetically and biologically undesirable environment. Excessive organic matter in a marina basin leads to lowered dissolved oxygen levels. It also makes water murky. Water clarity is reduced further from other activities that stir sediment and particles of decomposing organic debris up from the bottom. Litter like paper and styrofoam cups, plastic bags and soda can holders, fishing lines or nets, and discarded materials from boat maintenance activities creates an unsightly marina basin. It is also a threat to fish, waterfowl, and shorebirds, which can become entangled in plastics or might eat debris mistaken for food and die as a result. Harmful or toxic compounds in a marina basin create conditions that not only are dangerous to the health of people and animals but also can be aesthetically unpleasant and expensive to correct. Petroleum compounds can be toxic to aquatic habitat and a nuisance for marina patrons. Oil, gasoline, and materials that contain these compounds (such as discarded oily rags, bilge pads, and dirty bilge water) are pollutants that detract from the beauty of the marina setting by leaving an unsightly surface sheen. In addition, the discharge of any petroleum product in a sufficient quantity to cause a surface sheen is a violation of federal law and is punishable by the imposition of substantial fines and penalties. These compounds foul boats, docks, and anything else that comes into contact with them. Fish gills and the feathers of waterfowl are fouled by these substances, jeopardizing the animals' health, and plant leaves can become coated, preventing or reducing the plants' ability to photosynthesize.

All of these potential sources of pollution to marina basins and the undesirable conditions they cause for marina patrons and owners point out the importance of establishing controls on how wastes

Table 3-1. Marine sanitation device descriptions

MSD TYPES	
Type I (Vessel size = <65 ft)	A flow-through MSD in which sewage is filtered though an on-board treatment system and then directly discharged. Required to produce an effluent with a fecal coliform bacteria count ≤ 1,000/100 mL and no visible floating solids (40 CFR 140.3). Rely on maceration and disinfection for treatment of sanitary waste.
Type II (Vessel size = >65 ft)	A flow-through device larger than a Type I MSD. Required to produce an effluent with a fecal coliform bacteria count ≤ 200/100 mL and suspended solids ≤ 150 mg/L (40 CFR 140.3). A Type II MSD provides more advanced treatment than a Type I MSD.
Type III (All vessel sizes)	Device designed to prevent overboard discharge of treated or untreated sewage. Commonly a called holding tank because the sewage flushed from the marine head is deposited into a tank containing deodorizers and other non-treatment chemicals. Contents of the holding tank are stored until properly disposed of at a shoreside pumpout facility. Can be equipped with a discharge option, called a Y-valve, that allows the boater to direct the discharge from the head either into the holding tank or directly overboard. Overboard discharge is illegal in U.S. navigable waters.

are disposed of, the use of pumpouts, where storm water drains, and where boat maintenance is allowed to occur. Good pollution control can leave marina basin waters as healthy an environment for people, fish, aquatic plants, and other aquatic organisms as any other part of a waterbody.

Management Practice Systems

Water quality problems can't usually be solved with one management practice because single practices cannot provide the full range and extent of control needed to limit the entry of pollutants from numerous sources. Multiple management measures or practices can be combined to build *management practice systems* that address the pollutant control needs associated with pollutant generation from more than one source. For example, controlling petroleum hydrocarbon pollution is an objective of four marina management measures (storm water runoff, fueling station design, liquid material, and petroleum control). A single management practice cannot adequately control petroleum hydrocarbon pollution because one management practice can usually address pollution from only a single source. Separate management practices are necessary to control pollution from other sources. For instance, a grassed drainage swale can control petroleum hydrocarbon pollution from surface runoff, air/fuel separators can control it from boat fuel tanks, berms are helpful (and might be required) at liquid material storage areas, and bilge pads are effective in boat bilges. If any one of these sources is overlooked or inadequately addressed, the overall goal of controlling petroleum hydrocarbon pollution in the marina basin might not be attained.

Site-Specific Design of Management Practices

There is no single, ideal management practice for controlling a pollutant or class of pollutants in all situations. Rather, management practices should be chosen and designed based on the types of pollutants causing problems, sources of the pollutants, causes of pollution at the marina, climate, type of waterbody, existing water quality, habitats in and around the marina basin, pollution reduction goals, experience of the system designers, and willingness and ability of the marina owner to implement and maintain the practices. The relative importance of these and other factors varies depending on other considerations such as

whether the implementation is voluntary or mandatory (e.g., required under a storm water permit).

Important Characteristics of Marina Environments from a Pollution Perspective

Marinas are located on nearly every type of surface water—lakes, rivers, inland waterways, reservoirs, embayments, bays, coastal channels, and others. Each of these waterbody types has different characteristics that affect how pollutants behave in them; that is, whether they are diluted quickly or not, accumulate in sediments or remain in the water column, or concentrate in specific areas or disperse. Although marina operators cannot affect the qualities of or processes that occur in waterbodies, knowledge of the qualities and processes particular to the type of waterbody where a marina is located is useful when devising a pollution control strategy and in general for helping to understand the larger watershed context within which every marina is located.

General Factors Common to All Waterbodies

Sediment has the potential to be a concern at any marina because of the turbid waters it can create, the dredging that might become necessary if too much sediment accumulates in the marina basin, and the pollutants it can carry with it. Sediment can enter a marina from upland flow (storm water runoff) and from surrounding waters. The amount of sediment contained in either of these sources is very site-specific and needs to be assessed individually at each marina.

Along with the sediment are nutrients and toxic substances attached to sediment particles. The types and quantities of these pollutants are other factors that are best assessed on a site-specific basis. Many chemicals (including nutrients and chemical pollutants) have different forms with different tendencies to attach to particles, biodegrade, and volatilize. Each chemical form might have a different toxicity to aquatic life. The chemical form can change when the compound moves from one environment to another—for instance, from ground water to surface water or from fresh water to salt water. Heavy metals naturally react to particles and sorb onto suspended particulates. This process is particularly accentuated in estuaries, where the mixing of fresh and salt water creates turbulent and turbid conditions. Most metals transported down rivers to estuaries are removed to bottom sediments in the estuary.

Pollutant resuspension is another potential concern in marinas, and it is affected by currents, boat traffic, and dredging. Toxic metals and hydrocarbons are often mentioned in the context of pollutant resuspension, but bacteria and viruses, nutrients, organic matter, and any other pollutants concentrated in sediments are also resuspended by water turbulence and can cause water quality problems.

The type of waterbody on which a marina is located plays a role in processes in the marina basin, like sedimentation; pollutant delivery, settling, and resuspension; and circulation. The subsections that follow discuss the general types of environments where marinas are located and factors of concern in each of them.

Lakes and Reservoirs

Lakes and reservoirs are strongly affected by the characteristics of the watersheds in which they are located, more so than coastal waters because lakes and reservoirs are not flushed and mixed with a larger body of water. Water that enters lakes and reservoirs carries with it nutrients, sediment, oxygen, decomposing organic matter, fertilizers and pesticides used on farms and lawns, and weathered minerals. In addition, pollutants from on-site waste disposal systems (septic tanks) that leak into ground water, industrial and municipal point sources that discharge into rivers and streams that then feed into the lake or reservoir, street runoff, and pollutants from the atmosphere all enter lakes and reservoirs and affect their ecology.

The water quality and biological effects of pollutants discharged into the waters of lakes and reservoirs depend on a combination of lake and reservoir characteristics. Depth is one of the characteristics that determines the effect of marinas and recreational boating in a lake or reservoir. Lakes and deeper reservoirs are usually thermally divided during the summer into distinct upper (*epilimnion*) and lower (*hypolimnion*)

Watersheds are areas of land that drain to a single stream, lake, or other water resource. Watersheds are defined solely by drainage areas and not by land ownership or political boundaries.

portions. Because the density of water depends on its temperature, the temperature difference between the upper and lower portions creates a difference in density as well. Wind circulation alone is not enough to overcome the density difference between the upper and lower portions, so there is little exchange of dissolved oxygen between the upper portion and the lower portion while a lake or reservoir is divided in this manner.

The epilimnion usually has a depth of from about 10 feet in shallow lakes to 40 feet in deep lakes. A narrow region where water temperature changes rapidly with depth (usually about 1.5 ºF per 3 feet of depth), the *thermocline*, rests between the epilimnion and the hypolimnion. The hypolimnion is more or less uniform in temperature and extends from the base of the thermocline to the bottom of the lake or reservoir.

Stratified lakes and reservoirs have two periods of overturn or mixing each year, one in the autumn and another in the spring. The change of season from a warm summer to a cold winter destratifies lakes and reservoirs and induces mixing; the reverse process of warming with the change from winter to summer induces another mixing period. Because there is limited exchange of dissolved oxygen between the epilimnion and the hypolimnion while a lake or reservoir is stratified, the oxygen depleted in the hypolimnion during the summer is not replenished until the autumn overturn. During the overturn, when a lake or reservoir is unstratified, dissolved oxygen is usually uniformly distributed from the surface to the bottom.

Stratification and mixing of lakes and reservoirs influence the effect of pollutants on them. When a lake or reservoir is stratified, the upper (*epilimnetic*) volume of the lake or reservoir determines the volume of water available for dilution of fuel, oil, and other wastes that are not mixed into or do not sink into the hypolimnion while the waterbody is stratified. The total volume of the lake or reservoir determines the volume of water available to dilute pollutants over time.

Another important characteristic of lakes and reservoirs is the hydraulic residence time (HRT). The HRT of a lake or reservoir is the time it would theoretically take for all of the water in the lake or reservoir to be replaced by new water entering it naturally. For example, if a lake has a volume of 5 million gallons and natural flow into the lake from streams averages 10,000 gallons per day, the HRT of the lake would be 500 days (5,000,000/10,000). In a lake with an HRT of 10 years, therefore, even if pollution input were completely stopped, existing lake water would predominate for many years while new water slowly replaced the polluted water. There would be a long lag time (perhaps 2 to 3 years) before improvements in lake water quality would be seen.

Rivers

Water quality at any point along a river is strongly influenced by upstream water and land uses. If the conditions that affect upstream water quality change, downstream water quality is affected. Examples of upstream changes in conditions include clearing land near the river for construction or forest harvesting, which might increase sediment loading, or changing land use change from forest to agriculture, which could increase sediment, nutrient, and chemical pollution. Water quality changes at downstream locations can occur in pulses if inputs of pollutants from upstream dredging or pesticide and fertilizer applications, for instance, are short-lived. The duration of changes in water quality depends on the type of upstream change. A change in land use from forest to agriculture over a large area, for instance, could cause long-term changes in water quality, whereas an increase in suspended sediment from dredging might last no longer than the duration of the dredging work.

Estuaries

Estuaries are similar to coastal embayments with the special characteristic of receiving fresh water from upland areas via rivers and streams. This characteristic creates special circumstances and properties. Where fresh water meets salt water, there is a change in salinity and alkalinity, a

change in water density (because salt water is more dense than fresh water), a loss of water velocity, and turbulence due to the meeting of fast-moving river water and quiescent estuarine water. These factors affect the behavior of sediment and the pollutants attached to it.

Sedimentation is greater in the upper portions of estuaries where rivers enter because of the water's loss of velocity. Sedimentation also occurs where the fresh water and salt water meet because the change in salinity causes suspended particles to join together into larger particles and settle. The changes in salinity and pH affect many pollutants, such as nutrients and toxic metals, in the incoming fresh water as well. The form of a pollutant might change because of these changes in the water, making it less or more toxic or causing it to attach to or detach from sediment particles. As in coastal embayments, the force of tides influences estuarine environments as well.

Coastal Environments

Coastal environments are areas of high energy, with tides moving in and out, coastal storms, waves constantly washing against the shore, and currents moving along the coast. Marinas cannot afford to be subject to all of this energy because of the need to offer protection for boats and on-land structures; therefore, they are usually located on quieter embayments along the coast or are protected from coastal energies by artificial means like breakwaters. However, the energetic processes of the coast still exert a strong effect on the water quality and aquatic environment of marinas.

Coastal embayments have quieter waters than open coastal areas, and sediments tend to accumulate in quiet-water areas because the lack of water movement permits the sediment to settle. Countering this tendency are tides and coastal storms that mix sediments from the bottom and transport them to open waters. So, in marinas located in coastal embayments, pollutants can build up if tidal action is not strong or the embayment is well protected from storm action. As noted above, metals transported down rivers to estuaries sorb onto particulates and settle to sediments. In general, more than 90 percent of particulate matter transported by rivers settles in estuarine and coastal marine areas and does not escape to offshore waters.

Modification of coastal areas—for example, by excavating coastal land to create a marina or by adding breakwaters—can alter coastal currents near marina entrances. The effect in any particular area depends on local conditions relating to currents and the sizes and types of sediments transported by them. Coastal currents carry sediments with them, and these sediments tend to be transported into channels that lie perpendicular to the current. Artificial structures and channels can also alter erosion patterns due to alterations of wave patterns in the immediate vicinity. Thus, marinas in altered coastal environments might have to contend with problems of sedimentation and erosion that were not present before the coastal alterations.

Boating on Inland Waters

A picture of a marina on a large inland reservoir, lake, or river would look very similar to a picture of a coastal marina. Lakes and reservoirs range in size from small (an acre or less) to very large. Reservoirs operated by the Tennessee Valley Authority range in surface area size from relatively small (10 to 12 miles long by ½ mile wide) to large (180 miles long by 1 mile wide), and their depths typically range from 100 to 300 feet. The size of a lake or reservoir dictates the types of boats that can be used on it, and the boats used on large inland lakes and reservoirs are usually of the same types (keeled sailboats, large motorboats, and yachts) as those used along the coast. Marinas on large lakes and reservoirs are also very similar to coastal marinas. They can have as many as 200 slips (some marinas on Lake Winnipesaukee in New Hampshire have 150 to 200 slips); they often have fueling stations, pumpout services, and hull maintenance areas; boat use is concentrated on the weekends, with holiday weekends being especially busy. Inland marinas can also be smaller, especially those located on smaller lakes and rivers. A directory of marinas in Louisiana lists 51 marinas on freshwater lakes, rivers, and bayous with capacities of as few as 10 boats in slips or moorings.

Because reservoirs are dendritic (that is, they have a branching configuration; see Figure 3-1), the surface area in their main channels is limited. Marinas or docks extending into the main channel of a reservoir would impede navigation, and therefore they are typically located to the side of the main channel. Some typical features of lakes and reservoirs are summarized in Figure 3-1.

Boating Access

In 1984 Congress created the Aquatic Resources Trust Fund, which made two sources of funding available for the acquisition, design, and construction of recreational boating facilities. The Boating Safety Account is administered by the U.S. Coast Guard and primarily provides grants to states to help finance boating safety programs, one element of which is access. The Sport Fish Restoration Account is administered by the U.S. Fish and Wildlife Service. Ten percent of revenues to the account from recreational user taxes and a marine fuel tax must be expended by states for boating access. States may also use funds from the account to operate and maintain recreational boating facilities.

The States Organization for Boating Access (SOBA) was created in 1987 to promote the acquisition, development, and administration of recreational boating facilities. The organization maintains close ties with the Coast Guard and Fish and Wildlife Service both to ensure that the boating access aspects of the grant programs administered by these agencies receive the funds and attention that Congress intended and to provide input from states on program requirements.

Construction of boat ramps is an aspect of boating access that can affect shorelines and water quality in inland waters. Where appropriate, measures that can help protect the environment and ensure attractive and safe boating access points are highlighted throughout this document and are based on the concepts developed by SOBA. A thorough treatment of the topic can be found in SOBA's book *Design Handbook for Recreational Boating and Fishing Facilities* (1996), available from SOBA at 919-781-0239.

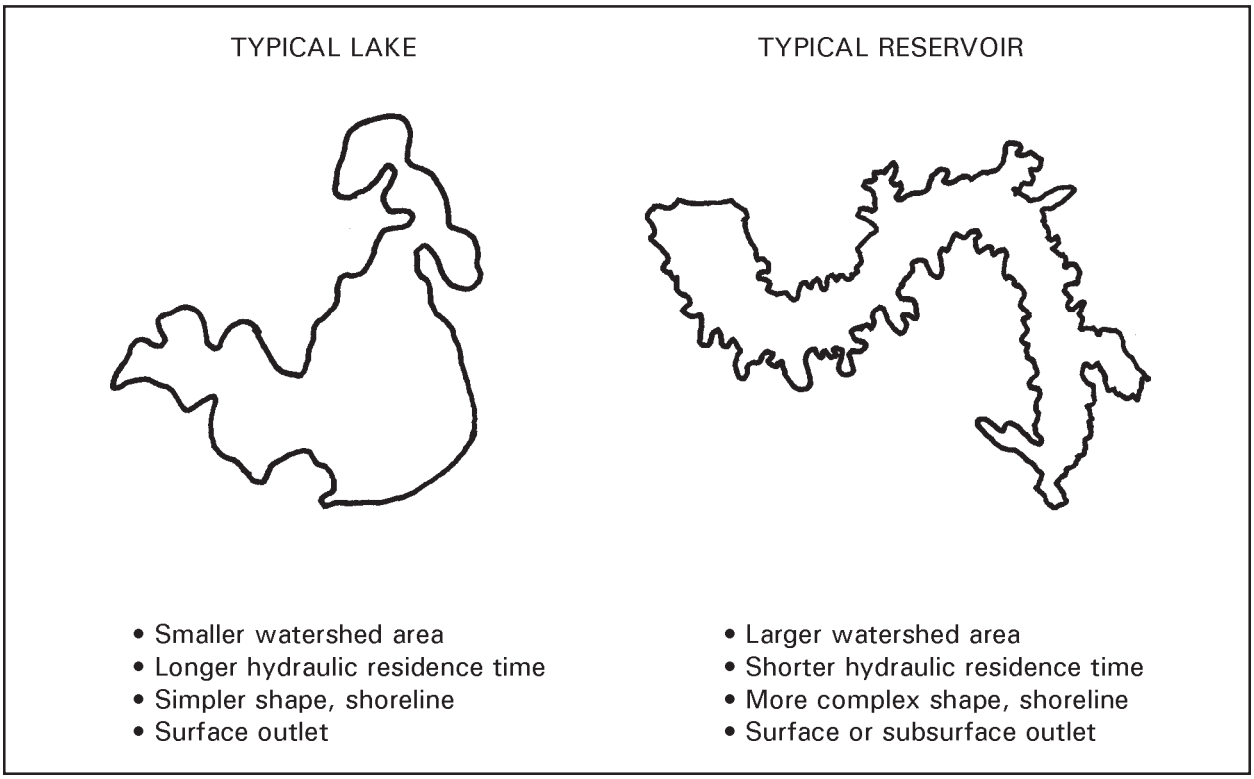

Figure 3-1. Typical features of and differences between lakes and reservoirs.

SECTION 4: MANAGEMENT MEASURES

Section 4 Contents

Introduction

Management measures are the best available, economically achievable practices or combinations of practices that can be used to address nonpoint source pollution from marinas and recreational boating. *Best management practices* (BMPs) are individual activities or structures that can be used alone or in combination to achieve the management measures.

EPA identified 15 measures for implementation within state coastal management areas. From discussions with marina owners and operators at facilities on fresh waters nationwide, these 15 management measures and associated practices have been found generally to be just as applicable to freshwater marinas as to coastal water marinas. They form the basic measures recommended in this guidance. This section discusses the 15 management measures for marinas and recreational boating and BMPs that can be used to achieve them.

The scope of this guidance is broad, covering diverse nonpoint source pollutants from marinas and recreational boating. Because it applies to all types of waterbodies, it cannot provide all practices and techniques suitable to all regional or local marina or waterbody conditions. Also, BMPs are continually being modified and developed as a result of experience gained from their implementation and the innovation of marina owners and operators across the country.

The guidance can help marina managers identify potential sources of nonpoint source pollution and offer potential solutions. Finding the best solution to a nonpoint source pollution problem at a marina requires taking into account the many site-specific factors that together compose the setting of a marina and identifying the most applicable BMPs.

Considering management measures and BMPs during marina design will help to ensure that the site has good flushing and water circulation characteristics, avoid encroachment on vital

aquatic habitats, improve habitat quality in and around the marina basin, and reduce the potential for water quality problems in the marina basin. Considering pollution prevention possibilities when planning a marina can help ensure that the design of the marina and activities at the marina do not lead to degraded water quality in the basin once the marina is operational. Incorporating pollution prevention and source reduction measures into an existing marina can help improve and protect water quality at the marina. Good water quality can help any marina keep operational costs low and improve customer satisfaction.

Marina siting and design play important roles in determining how good water quality in a marina basin will be. Marina location (*open*—sited directly on a river, lake, bay, or barrier island, or *semi-enclosed*—sited on an embayment, cove, or other protected area) affects circulation in a marina basin and, therefore, how well it flushes. The depth of a marina basin affects circulation of deep water in the basin and how often it needs maintenance dredging, if at all. Dredging stirs contaminants from the bottom and can disturb bottom habitats. Marina design, especially the configuration of the basin and its orientation to prevailing winds, waves, tides, and currents, affects the retention of pollutants in a marina basin and the movement of pollutants out of a basin. Some marinas may be affected by storm water runoff from upland areas in the watershed.

Existing marinas can improve water and habitat quality in the marina basin through application of these management measures. Circulation and flushing may be improved in a marina basin by creating an additional opening in a breakwater. Shoreline stabilization may reduce the sedimentation rate and sediment levels in a marina basin, provide an area for patron activities, and make shoreline habitats more suitable for a variety of aquatic and terrestrial plants and animals. Improvements to storm water runoff patterns, fueling stations, sewage facilities, hull maintenance areas, or other areas or aspects of a marina where pollutants are generated can reduce pollutant inputs to the marina basin from these sources and improve water quality.

A marina designed with the important points of the management measures in mind—including physical location, flushing and circulation, aquatic habitat, shoreline stability, and pollution prevention—will probably have better water quality and fewer water-pollution-related problems during its life of operation, and economic benefits may result from making such improvements.[1] This applies whether the management measures are applied while the marina is being designed or incorporated into the marina after it is operational.

Subsections 4.1 through 4.15 of this section discuss each of the management measures. It is best to plan to apply management measures comprehensively by first evaluating pollution problems throughout the marina and incorporating those elements of different management measures that will most efficiently and effectively address the specific pollution issues at the marina. With a comprehensive approach to management measure application, any marina can achieve or maintain good water quality and maintain healthy shorelines and aquatic habitats.

In addition to the management measures, BMPs are also described. EPA has found the BMPs described in this guidance to be representative of the types of BMPs that can be applied successfully to achieve the management measures. Site-specific or regional circumstances, however, should be considered in the selection of BMPs for a particular marina. Circumstances such as type of adjacent waterbody, climate, and type of work performed at the marina affect the design constraints and pollution control effectiveness of BMPs. The list of practices for each management measure is not all-inclusive, and marina operators are encouraged to use other BMPs where they would be as effective as or more effective than those discussed in this guidance.

The management measures for marinas and recreational boating are applicable to the facilities and their associated shore-based services that support recreational boats and boats for hire. Generally, the following types of operations and facilities would be expected to benefit by use of

[1] See USEPA, 1996: *Clean marinas—Clear Value: Environmental and Business Success Stories*.

the management measures and BMPs in this guidance:

- Any facility that contains 10 or more slips, piers where 10 or more boats may tie up, or any facility where a boat for hire is docked.
- Boat maintenance or repair yards that are adjacent to the water.
- Any federal, state, or local facility where recreational boat maintenance or repair is done on or near the water.
- Public or commercial boat ramps.
- Any residential or planned community marina with 10 or more slips.
- Any mooring field where 10 or more boats are moored.

Facilities with fewer than 10 slips, where fewer than 10 boats are moored, or where piers have a capacity of fewer than 10 boats might also benefit from the management measures and BMPs described in this guidance, and operators of such facilities are encouraged to review the information presented here and consider its possible application to their situations.

Some of the management measures (e.g., marina flushing) are more applicable to the siting and design phase of marina construction or expansion, while others (e.g., maintenance of sewage facilities) concern marina operation and maintenance and are more applicable to operational marinas. Still others (e.g., storm water runoff) are applicable to all marinas, whether in the design phase, already operational, or in the process of expanding.

Following the discussion of each management measure and its associated BMPs is a table that restates the management measure and summarizes the environmental concerns that the management measure addresses, the BMPs applicable to the management measure, and information pertinent to the implementation of each BMP. The table that follows here, *Key to BMP Tables*, describes the type of content in each column in the tables. The tables (beginning with *BMP Summary Table 1*, p. 4-11) are organized as follows:

- The first column, *Best Management Practice Examples,* lists the BMPs mentioned in this guidance that can be used to achieve the management measure. Where appropriate, BMPs are divided by category, either pollution prevention or source reduction, as described in the *Key to BMP Tables.*
- The second column, *Marina Location & Usage*, identifies where in the marina the BMP would usually be located and the purpose for its use. The applicability of each BMP is categorized as universal, general, or recommended, as described in the *Key to BMP Tables.*
- The third column, *Benefits to Marina*, describes the benefits that marina owners and operators and boat owners at the marina could expect from using the BMP. The magnitude of the benefits is categorized as high, moderate, or low, as described in the *Key to BMP Tables.*
- The fourth column, *Projected Environmental Benefits*, describes the environmental benefits that can be expected from using the BMP. These are also categorized as high, moderate, or low, as described in the *Key to BMP Tables.*
- The fifth column, *Initial Cost Estimate*, is an estimate of the cost of initially installing the BMP (e.g., a structural BMP) or establishing the practice (e.g., a recycling program) at the marina. A cost range, as described in the *Key to BMP Tables*, is provided for each BMP.
- The sixth column, *Annual Operation & Maintenance Cost Estimate*, is an estimate of the ongoing cost, if any, of using or maintaining the BMP at a marina. The cost of annual operation and maintenance is estimated as for the initial cost estimate. See the *Key to BMP Tables.*
- The last column, *Notes,* provides descriptions of additional benefits or other information pertinent to the BMP.

KEY TO BMP TABLES: Title of Management Measure						
MANAGEMENT MEASURE: The statement of the U.S. Environmental Protection Agency management measure.						
APPLICABILITY: A statement of the general applicability of the management measure.						
ENVIRONMENTAL CONCERNS: A descriptive statement of the potential environmental problems, what the pollutants could be, reason for concern, and how they could get into the water.						
MANAGEMENT MEASURE PRACTICES						
Best Management Practice Examples	**Marina Location & Usage**	**Benefits to Marina**	**Projected Environmental Benefits**	**Initial Cost Estimate**	**Annual Operation & Maintenance Cost Estimate**	**Notes**
Each best management practice (BMP) listed is a recommended example used successfully by marinas or boaters. Many of these practices are simple common sense. Not all practices are appropriate for each marina since each facility has site-specific needs. Managers can alter a practice to meet their site-specific situation as appropriate to achieve comparable benefits. In some marinas a single practice might be sufficient to achieve a result, and in others a combination of practices might be necessary. This list should not limit anyone from trying something new or different if it is cost-effective and practical and will help maintain or improve water quality.	This is a general description of where in the marina the practice is likely to be used. For example, a pumpout is where it is easiest for most boats to get service, such as on the fuel dock. A vacuum sander is used in the boat maintenance area. No-wake zones are present in the channels leading to or near the marina basin.	Use of this practice should provide clear benefits to the marina or boat owner for adoption to happen. Benefits may be economic, simple to use, available off the shelf, easily taught/learned, and effective. The benefits listed are typical and will help in determining which practice to select for the site-specific need.	A good practice has environmental benefits and improvements to clean boating. Each recommended practice has one or more environmental benefits for consideration. Although it is impossible to predict exact benefits everywhere, the most common found here will aid in selecting the most cost-effective practice. Use of any practice must predictably result in clear and measurable environmental protection or improvement in water quality.	Estimated cost ranges for the purchase, construction, and installation of each practice. Actual costs vary from site to site. The initial cost does not include the cost of applying for construction permits and legal services.	Estimated annual cost ranges for operating each practice and maintaining it in running condition for a reasonable use life. Actual costs vary from operation to operation.	Each practice has descriptions of additional benefits, effects, information, tips, advice, cautions, or comments to help select and use the technique for cleaner boating and marina facilities.

KEY TO BMP TABLES. (cont.) Title of Management Measure						
Best Management Practice Examples	**Marina Location & Usage**	**Benefits to Marina**	**Projected Environmental Benefits**	**Initial Cost Estimate**	**Annual Operation & Maintenance Cost Estimate**	**Notes**
Some BMPs are applied where products are used to prevent pollutants from being released into the water. They are often the first, best, least costly, and most effective practices to prevent contaminants from entering the water. BMPs of this type include not using a toxic solvent, diluting a product so it is less toxic, switching to a less or non-harmful product, or doing something differently so no pollution results. Education can teach people to change their behavior so they do things in a less polluting manner or to use methods that reduce the type or amount of contamination created.	Some BMPs may be appropriate for use in all or most marinas and boats, whereas others have limited usage. Select practices that are appropriate and cost-effective for each site-specific need. Every BMP will not work everywhere. Some could be broadly effective in many sites; others are less adaptable for wide or effective use.	HIGH = Considerable value to user; best cost/benefits when used. MODERATE = Of value to user; good cost/benefits from use. LOW = Some value; fewer cost/benefits to the user.	HIGH = Considerable environmental protection; clear and obvious water quality improvement can be expected. MODERATE = Protects the environment; improvement to water quality could be expected. LOW = Some protection to the environment; limited water quality improvement expected.	NONE = $0 LOW = under $2,000 MODERATE = $2,000 to 9,999 HIGH = $10,000 to 24,999 EXPENSIVE = $25,000+ When a range is given, e.g., High to Moderate, expect cost to lean toward higher end	NONE = $0 LOW = under $1,000 MODERATE = $1,000 to 4,999 HIGH = $5,000 to 9,999 EXPENSIVE = $10,000+ When a range is given, e.g., Low to Moderate, expect cost to lean toward lower end	

KEY TO BMP TABLES. (cont.) Title of Management Measure						
Best Management Practice Examples	**Marina Location & Usage**	**Benefits to Marina**	**Projected Environmental Benefits**	**Initial Cost Estimate**	**Annual Operation & Maintenance Cost Estimate**	**Notes**
Other BMPs are used to remove pollutants from the environment, and are applied between the place where pollutants are released and the water. These practices can capture, filter, screen, trap, contain, absorb, or chemically neutralize pollutants or divert them to municipal sewer lines. Recycling and use of a filter in a storm drain are examples. These BMPs often are more expensive to use and less effective than BMPs that reduce pollutant releases.	UNIVERSALLY RECOMMENDED Very effective practice for wide use; best choice; greatest cost/benefits; can be used in any marina (or on any boat) where applicable. GENERALLY RECOMMENDED Good practice for common use; effective choice; good cost/benefits; can be used in most marinas (or on most boats) where applicable. RECOMMENDED Practice for selected use, workable choice; reasonable cost/benefits; may be used in some marinas (or some boats) where better practices are not available or practical.					

4.1. Marina Flushing

Management Measure for Marina Flushing:

Site and design marinas such that tides and/or currents will aid in flushing of the site or renew its water regularly.

Management Measure Description

Water quality in a marina basin depends largely on how well the basin is flushed, which depends in turn on how well water circulates within the marina. Studies have shown that adequate flushing improves water quality in marina basins, reduces or eliminates water stagnation, and helps maintain biological productivity and aesthetic appeal. Flushing can reduce pollutant concentrations in a marina basin by anywhere from 70 percent to almost 90 percent over a 24-hour period.[1]

When a single number (e.g., 10 days) is given as the *flushing time* or *residence time* of a body of water (e.g., marina basin, harbor, or estuary), this number represents an average and doesn't accurately reflect what is happening inside the marina basin. Actually, flushing time in a marina basin can range from zero days at the boundary with the adjacent waterbody (at points of entry into the marina basin) to as much as several weeks within the marina basin at secluded locations or where in-water structures prevent water from circulating.

In a poorly flushed marina, pollutants tend to concentrate in the water and/or sediments. Pollutants and debris can collect in poorly flushed corners or secluded or protected spots in the same way that leaves collect in depressions in the ground where they are protected from wind. Stagnant, polluted water—with little biological activity, lifeless shorelines, and offensive odors—can be the consequence.

In tidal waters, flushing is driven primarily by the ebb and flow of the tide. A large tidal volume relative to the total volume of a marina basin provides excellent flushing because each tidal exchange replaces a large amount of the marina basin water with "new" water from outside the marina basin. This condition is common on coastal waters in northern New England, the Pacific Northwest, and Alaska, where tidal circulation should adequately flush marinas.

In nontidal coastal waters, such as the Great Lakes, wind drives circulation in the water adjacent to a marina. The circulating water outside a marina basin can have a flushing effect on water within the marina if the speed, persistence, and direction of the wind create a strong enough current. In many situations wind-driven currents can provide adequate flushing of marina basins.

In river waters, with current flow, water usually moves into and out of the marina basin continuously unless the basin is built into the land or has only one small entrance channel.

The BMPs mentioned below are particularly applicable for incorporation into a marina's design at new and expanding marinas. Marinas with poor water quality that could be attributed to poor flushing might also benefit from using one or more of the following BMPS, as appropriate. Entrance channel design and wave protection structures must be designed with other factors in mind as well. Adequate protection from wave energies, episodic storm currents, and ice floes and shoreline erosion protection must be considered in the overall design strategy.

1 Cardwell and Koons, 1981; Tetra Tech, 1988.

Applicability

This management measures primarily applies to new and expanding marinas.

Best Management Practices

♦ *Ensure that the bottom of the marina and the entrance channels are not deeper than adjacent navigable channels*

Flushing rates in marinas can be improved and maximized by proper design of entrance channels and the basin. Areas with minimal or no tides or poor circulation should have basin and channel depths designed to gradually increase toward open water to promote flushing.

Even where good flushing does occur, this alone does not guarantee that a marina's deepest waters will be renewed on a regular basis. As mentioned previously, deep canals and depressions much deeper than adjacent waters might not be adequately flushed by tidal action or wind-generated forces. Fine sediment and organic debris will collect in them, and low dissolved oxygen concentrations can result. In the warmer months when dissolved oxygen concentrations are normally low because of higher water temperatures, the even lower dissolved oxygen concentrations in these depressions can deteriorate water quality and hinder biological activity in the water.

♦ *Consider design alternatives in poorly flushed waterbodies to enhance flushing. For example, consider*

- An open design where a semienclosed design is not functional.
- Floating wave attenuators where fixed breakwaters are not functional.

When selecting a marina site and developing a design or when reconfiguring an existing marina, the need for efficient flushing of marina waters should be a prime consideration.

Where a poorly flushed location is the only one available or where a marina is already operational in such a location, special arrangements may be necessary to ensure adequate flushing. Selection of an open marina design may be considered. Open marina designs have no natural barriers to restrict the exchange of water between the larger waterbody and the marina basin. To accommodate both improved flushing and protection from wave energy, floating wave attenuators can be useful. Floating wave attenuators do not impede flushing because water exchange is not restricted by an underwater structure, yet the marina is protected from limited wave action. Floating wave attenuators can provide effective protection where waves do not usually exceed 3 feet, and open area designs can be a viable alternative where they do not leave a marina exposed to excessive wave action that could damage property and cause shoreline erosion.

♦ *Design new marinas with as few enclosed water sections or separated basins as possible to promote circulation within the entire basin.*

Overall flushing in a marina is a function of the number of separate basins in the marina. A marina in open water generally flushes better than a one-basin marina; a one-section marina, instead of square corners, can eliminate stagnant corner water and can help produce strong circulation in a marina basin. A marina in open water flushes better than a one-segment marina, a one-segment marina generally flushes better than a two-section marina, and so forth (Figure 4-1). Curved corners, instead of square corners, can eliminate stagnant corner water and can help produce strong circulation within a marina basin.

♦ *Consider the value of entrance channels in promoting flushing when designing or reconfiguring a marina.*

There are situations where it may be necessary to have areas deeper than the rest of the marina basin. For example, Cove Haven Marina (Rhode Island) services large 12-meter America's Cup sailboats with deep keels and needs sufficiently deep water in and adjacent to the boat haul-out facility to do so. In this case, the state allows the marina to maintain this site dredged deeper than the rest of the marina (USEPA, 1996: *Clean Marinas—Clear Value*).

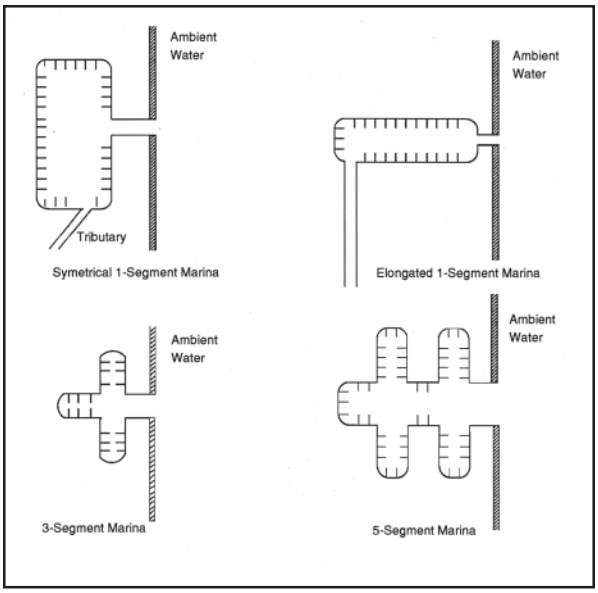

Figure 4-1. Example marina designs.

The alignment and number of entrance channels may affect flushing, along with many other site-specific factors. The following points generally hold true and should be considered when designing or reconfiguring a marina:

- Entrance channels that follow the natural channel alignment and have only gradual bends promote flushing.
- Where the tidal range is small, a wider entrance may promote flushing.
- Where the tidal range is large, a single narrow entrance channel may improve flushing.
- In tidal and nontidal waters, entrance channels aligned parallel to the direction of prevailing winds or water flow might enhance flushing.

The orientation and location of a solitary entrance might affect marina flushing rates and should be considered along with other factors that affect flushing. Consider the following points:

- In a square or rectangular marina basin, a single entrance at the center of a marina may promote flushing better than a single corner-located asymmetric entrance.
- In a circular marina basin, an off-center entrance channel might promote better circulation.

♦ *Establish two openings at the most appropriate locations within the marina to promote flow-through currents.*

Where water-level fluctuations are small (e.g., nontidal waters), alternatives in addition to the ones previously discussed can be considered to ensure adequate water exchange and to increase flushing rates. An elongated marina situated parallel to a tidal river may be adequately flushed by using two entrances to promote a flow-through current. A small outlet onto an adjacent waterbody can be opened solely to enhance flushing (Figure 4-2). Buried pipelines have been similarly used to promote flushing.

♦ *Consider mechanical aerators to improve flushing and water quality where basin and entrance channel configuration cannot provide adequate flushing.*

Where poor water quality throughout a marina basin or in secluded spots is a problem because of poor flushing, limited circulation, or other circumstances, mechanical aerators (such as those used for ice protection) might be helpful.

These devices can raise the level of dissolved oxygen in the water and circulate floating debris out of corners into the rest of the basin, where it can be flushed out naturally. Underwater air bubblers or submerged impeller-type motors can be effective during short-term episodes that might occur during the summer. In certain circumstances, such as in shallow and enclosed waters, water clarity improvement is often noted if artificial aeration is used.

Both compressed air and agitator systems work in fresh water, salt water, and brackish water. They do not work well in ice-covered rivers because river currents destroy bubble or flow patterns and because of the lack of heat. Thermal mixing of river water is a natural process, and a river that has formed an ice cover has already dissipated nearly all available heat.

Figure 4-2. Puerto Del Ray Marina (Puerto Rico) has an offshore rubble mound breakwater that protects the southeastern and eastern exposures of the marina. Two hundred feet of the southern breakwater was removed, creating a new south side breachway exit/enterance that is still well protected but now allows for greater circualtion in the basin. Water clarity improved after the alteration, and as a result new customers (a 3 percent increase for the marina) relocated to Puerto Del Rey Marina (USEPA, 1996: *Clean Marinas—Clear Value*).

Ice suppression systems available for marinas hinder ice formation by using compressed air bubblers or in-water agitators. Bubbler systems force air to entrain warmer bottom water into a rising plume, which reacts with and melts the underside of the ice sheet. Water agitators work on the basis of thermal reserves of basin waters and surface currents to prevent freezing.

BMP Summary Table 1 summarizes the BMPs for Marina Flushing mentioned in this guidance.

BMP Summary Table 2. WATER QUALITY ASSESSMENT MANAGEMENT

MANAGEMENT MEASURE: Assess water quality as part of marina siting and design.

APPLICABILITY: Primarily applies to the design of new and expanding marinas.

ENVIRONMENTAL CONCERNS: Water quality is assessed during the marina design phase to predict the effect of marina development on the chemical and physical health of the water and aquatic environment. Marina development can cause changes in flushing and circulation; and boat maintenance, boat operation, and the human activities in and around boats can be sources of solid and liquid wastes, pathogenic organisms, and petroleum compounds. The results of water quality predictions or sampling are compared to state or federal water quality standards. Water quality assessments for dissolved oxygen concentration and pathogenic organisms can be used as indicators of the general health of an aquatic environment. Water quality assessments can be useful in determining the suitability of a location for marina development, the best marina design for ensuring good water quality, and the causes and sources of water quality problems.

WATER QUALITY ASSESSMENT PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Use water quality sampling and/or monitoring to measure water quality conditions	Proposed marina basin/expansion site; generally recommended	MODERATE; can help determine whether a proposed marina will negatively affect water quality and suggest design alternatives; might be required	MODERATE to HIGH; can help determine if an area can sustain good water quality with a marina	HIGH, depends on type of tests and number or samples	NONE	Monitoring an area larger than just the marina is necessary to determine the source of water quality problems; gather existing data first; check with state and county agencies, U.S. Geological Survey (USGS).
Use a water quality modeling methodology to predict post-construction water quality conditions	Proposed marina basin; recommended for large new projects	MODERATE to HIGH; can cost less than sampling; can assist in choosing the best design; suitable for predicting circulation and wave damage exposure	MODERATE to HIGH; models can predict flushing and pollutant loads for many different marina designs	MODERATE to HIGH	NONE	Some models applicable to marinas are reviewed in Section 5.
Monitor water quality using indicators	Marina grounds and basin; universally recommended	HIGH to MODERATE; quickly provides information about the health of the water and aquatic habitat	HIGH; regular visual inspections help track changes, help identify potential problems before they become large	NONE	LOW to NONE	Appearance, clarity, and smell of water, abundance and appearance of aquatic plants, and appearance of sediments are all good indicators; very cost-effective; simple; requires little training.
Use rapid bioassessment techniques to monitor water quality	Marina basin; recommended where bioassessment protocols have been established	HIGH to MODERATE; provides information about the biological quality of marina waters.	MODERATE; can indicate water quality problems that might not be tested for in a water quality sampling program.	LOW; might have to train someone in aquatic invertebrate identification.	LOW	Cost-effective; not available for many waters

BMP Summary Table 1. (cont.) MANAGEMENT MEASURE FOR MARINA FLUSHING						
Best Management Practice Example	**Marina Location & Usage**	**Benefits to Marina**	**Projected Environmental Benefits**	**Initial Cost Estimate**	**Annual Operation & Maintenance Cost Estimate**	**Notes**
Establish two openings at the most appropriate locations within the marina to promote flow-through currents	Entrance channels; recommended only where feasible	MODERATE to HIGH; flow-through circulation promotes good water	MODERATE to HIGH; entrance channels aligned with natural flow can increase flushing	EXPENSIVE	HIGH to EXPENSIVE; depending on degree of wave attenuation	More than one entrance channel may leave the marina too exposed
Consider mechanical aerators to improve flushing and water quality where basin and entrance channel configuration cannot provide adequate flushing	Marina basin; generally recommended for marinas with poor circulation	HIGH; useful to keep floating debris from collecting in corners; also can be used as ice control system in winter	HIGH; can quickly improve circulation and raise the dissolved oxygen concentration; improves water clarity	LOW - per unit; MODERATE to HIGH - bubbler system	LOW to MODERATE; depending on number of units and days used	Air bubblers or impeller motors are effective during short periods of low dissolved oxygen concentration, e.g., during a very hot period.

4.2. Water Quality Assessment

Management Measure for Water Quality Assessment:

Assess water quality as part of marina siting and design.

Management Measure Description

Water quality can be assessed as a part of new marina development or expansion. This management measure is useful for determining the suitability of a location for marina development, the best marina design for ensuring good water quality, and the causes and sources of water quality problems.

When planning for a new or expanded marina site, state water quality management agencies can be contacted for available information. A water quality assessment consists of taking samples of water from a waterbody; testing them for one or more criteria, usually chemical and physical characteristics and the presence of pathogenic organisms; and comparing the results to accepted standards of water quality. Historically, state water quality assessments have focused on testing the dissolved oxygen concentration of water and the presence of pathogen indicators, such as fecal coliform bacteria (*Escherichia coli*) and enterococci. Other tests, such as measurement of water temperature or Secchi disk depth (Figure 4-3), are used as well.

The dissolved oxygen concentration in water is used as an indicator of the general health of an aquatic ecosystem. A good concentration of dissolved oxygen (typically about 6 milligrams/liter [mg/L], but "good" can vary from waterbody to waterbody) can indicate that there's enough oxygen for fish to breathe and aquatic plants to photosynthesize, and there's a good exchange of gases between the waterbody and the atmosphere. A low dissolved oxygen concen-tration, or a level below what is normal for the waterbody, might indicate that there is too much decaying organic matter in the water or that a film of oil or other substance is on the surface preventing an exchange of gases with the atmosphere, either of which could be due to nonpoint source pollution.

Pathogenic organisms in the water indicate the potential for public health problems. Pathogens are contained in human and animal fecal waste, and they can cause illness. Tests for these water quality criteria can be used to determine the condition of a site where a marina is proposed to be developed.

Federal, state, and municipal agencies routinely test the water of coastal and estuarine waters, lakes, and reservoirs, especially if there is a lot of recreational use of the waterbody and protection of public health is important. Results of the tests can be obtained by calling the agency that does the testing (e.g., state department of natural resources or environmental protection).

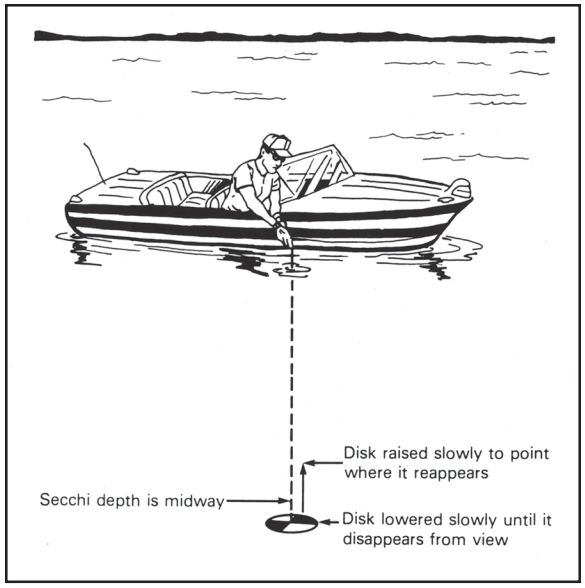

Figure 4-3. The Secchi disk is a simple and useful tool for monitoring long-term trends in water quality.

Applicability

This management measure primarily applies to the design of new and expanding marinas.

Best Management Practices

Monitoring can serve many purposes, such as determining the ambient quality of water, determining the extent or causes and sources of a water quality problem, analyzing trends in water quality, and measuring the effectiveness of management practices used in the marina. *Modeling* is appropriate for comparing the effects of different options, such as predicting the water quality that would result from different marina designs before actual construction or the effects of various marina designs on water circulation in a marina basin before a planned expansion. In areas of known good water quality, monitoring might not be needed for small marina developments. The BMPs described here are useful for major developments or expansions so that sufficient water quality measurements are made at a site to ensure that existing conditions are not significantly altered.

When considering monitoring water quality at a marina, consider that results indicating a water quality problem exists at a marina do not necessarily mean that the marina is the source of the problem. Marinas often are located where their water quality reflects other activities in a watershed, lake, or river. Determining of the source of water quality problems often involves a watershed-wide monitoring effort. See page 1-5 for more information about EPA's Watershed Approach.

- *Use water quality sampling and/or monitoring to measure water quality conditions.*

Water quality data for the waterbody on which a marina is located might be available. Many states or local agencies collect this information. A state agency of environmental protection, a local or regional water quality authority, a parks and recreation department, USEPA, the U.S. Geological Survey, the U.S. Army Corps of Engineers, or a local university (such as a Sea Grant college) is potential source of water quality data.

It will be useful to contact the state agency responsible for water quality data at the outset of a project to establish water quality objectives and to determine whether water quality data are available for the site. Comparing water quality data from the marina to water quality data collected by a state agency, for instance, would be best accomplished by using the same sampling strategy and analytical methods used by the state agency so that a comparison of the two sets of data will be meaningful (Figure 4-4).

- *Use a water quality modeling methodology to predict postconstruction water quality conditions.*

Not all proposals for new or expanding marinas will require the use of modeling techniques to predict water quality characteristics. Numerical modeling can be useful, however, for studying the effects of different design alternatives and for selecting the design that best avoids or minimizes impacts on water quality.

Modeling techniques can be useful for predicting flushing time and pollutant concentrations in the absence of site-specific data. A distinct advantage of numerical models over monitoring studies is the ability to perform sensitivity analyses. For instance, dissolved oxygen concentrations and flushing times can be predicted for a number of design options once data for the marina project have been entered into the model. Modeling can be an expensive undertaking, and the costs should be weighed against any anticipated benefits.

A professional marina designer would be the best person to consult regarding the feasibility and cost

EPA Region 4 completed an in-depth report on marina water quality. The primary focus of the study was to provide guidance for selecting and applying computer models for analyzing the potential water quality impacts (both dissolved oxygen and pathogen indicators) of a marina. EPA reviewed a number of available methods and classified them into three categories—simple methods, mid-range models, and complex models. See Section 5.

Figure 4-4. Cedar Island Marina (Connecticut) scallop monitoring. After the state of Connecticut declined a permit for expansion on the grounds that it would result in "destroying valuable marina life and habitat," the marina began a program of water quality monitoring to prove the state wrong. The marina monitors temperature, salinity, dissolved oxygen, habitat, coastal birds, finfish, and scallop growth. The photo shows marina personnel checking scallop cages suspended below the docks. The marina has found better dissolved oxygen levels and lower fecal coliform bacteria counts than those reported for the town beach, and heavy metals do not accumulate in scallops grown at the marina (USEPA, 1996: *Clean Marinas—Clear Value*).

of using models. Some models applicable to marinas are reviewed in Section 5.

♦ *Monitor water quality using indicators.*

Water sampling, water quality monitoring, and numerical modeling are not necessary in many cases to gather information about the health of a marina's waters. Simple yet effective forms of monitoring that provide valuable information about the conditions in the water can be done by someone knowledgeable of the marina and the surrounding waterbody. Visual inspections of the abundance and appearance of aquatic plants in and around the marina, use of the marina and surroundings by ducks and geese, the appearance of bottom sediments, the general clarity of the water near docks, and the abundance of fish can provide all the information necessary to judge the health of the water (Figure 4-5). All of these characteristics are indicators of the health of the waters. These types of inspections can be done during the course of daily operations by any member of the marina staff at minimal cost to the marina. (See volunteer monitoring BMP below.) Done every year, these visual inspections lead to a good knowledge of the "normal" conditions in the marina and surrounding waterbody, and any changes will be apparent to the keen observer. When changes are noted, some limited water sampling can be done to determine what might account for them if a local or state environmental management authority hasn't already done this.

♦ *Use rapid bioassessment techniques to monitor water quality.*

Rapid bioassessment techniques can provide a cost-effective means to assess potential sites for marina development and to assess water quality in an existing marina basin. This technique is discussed further under the Habitat Assessment management measure.

♦ *Establish a volunteer monitoring program.*

Marinas can help involve their clientele and local community in water quality issues and environmental protection at the marina by beginning a volunteer monitoring program. Across the country, private citizens are learning about water quality issues and helping protect the Nation's water resources by becoming volunteer monitors. Volunteers analyze water samples for dissolved oxygen, nutrients, pH, temperature, and a host of other water constituents; evaluate the health of stream habitats and aquatic biological communities; inventory streamside conditions and land uses in a watershed that might affect water quality; catalog and collect beach debris; and restore degraded habitats.

EPA's Office of Water encourages citizens to learn about their water resources and supports volunteer monitoring because of its many benefits. Volunteer monitors build awareness of pollution problems, become trained in pollution prevention, help clean up problem sites, provide data for waters that might otherwise be unassessed, and increase the amount of water quality information available. Among the uses of volunteer data are delineating and characterizing watersheds, screening for water quality problems, and measuring baseline conditions and trends.

For more information, contact EPA's Office of Wetlands, Oceans, and Watersheds, Monitoring Branch, or the monitoring branch of a regional EPA or state environmental protection office. EPA's volunteer monitoring Web site is located at <www.epa.gov/owow/monitoring/vol.html>.

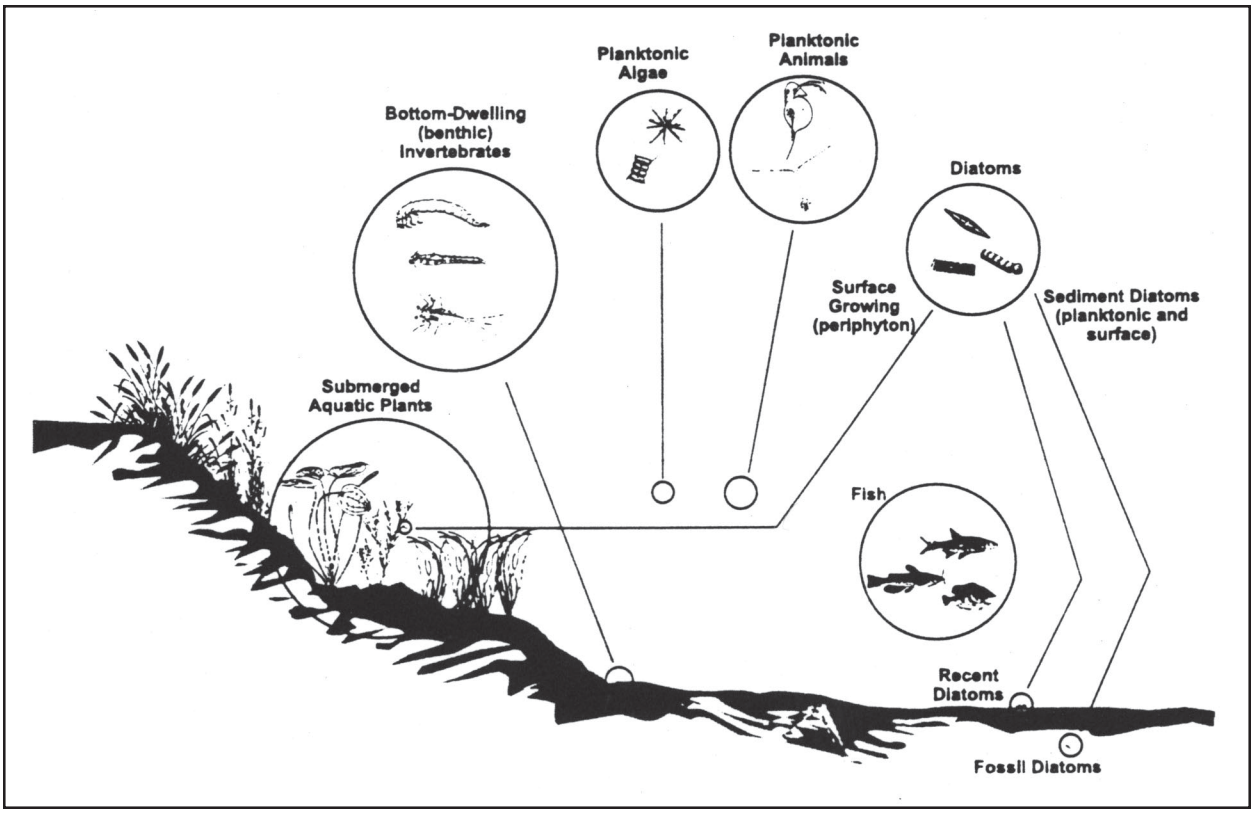

Figure 4-5. Biological assemblages used for lake monitoring.

BMP Summary Table 2 summarizes the BMPs for Water Quality Assessment mentioned in this guidance.

BMP Summary Table 2. WATER QUALITY ASSESSMENT MANAGEMENT

MANAGEMENT MEASURE: Assess water quality as part of marina siting and design.

APPLICABILITY: Primarily applies to the design of new and expanding marinas.

ENVIRONMENTAL CONCERNS: Water quality is assessed during the marina design phase to predict the effect of marina development on the chemical and physical health of the water and aquatic environment. Marina development can cause changes in flushing and circulation; and boat maintenance, boat operation, and the human activities in and around boats can be sources of solid and liquid wastes, pathogenic organisms, and petroleum compounds. The results of water quality predictions or sampling are compared to state or federal water quality standards. Water quality assessments for dissolved oxygen concentration and pathogenic organisms can be used as indicators of the general health of an aquatic environment. Water quality assessments can be useful in determining the suitability of a location for marina development, the best marina design for ensuring good water quality, and the causes and sources of water quality problems.

WATER QUALITY ASSESSMENT PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Use water quality sampling and/or monitoring to measure water quality conditions	Proposed marina basin/expansion site; generally recommended	MODERATE; can help determine whether a proposed marina will negatively affect water quality and suggest design alternatives; might be required	MODERATE to HIGH; can help determine if an area can sustain good water quality with a marina	HIGH, depends on type of tests and number or samples	NONE	Monitoring an area larger than just the marina is necessary to determine the source of water quality problems; gather existing data first; check with state and county agencies, U.S. Geological Survey (USGS).
Use a water quality modeling methodology to predict post-construction water quality conditions	Proposed marina basin; recommended for large new projects	MODERATE to HIGH; can cost less than sampling; can assist in choosing the best design; suitable for predicting circulation and wave damage exposure	MODERATE to HIGH; models can predict flushing and pollutant loads for many different marina designs	MODERATE to HIGH	NONE	Some models applicable to marinas are reviewed in Section 5.
Monitor water quality using indicators	Marina grounds and basin; universally recommended	HIGH to MODERATE; quickly provides information about the health of the water and aquatic habitat	HIGH; regular visual inspections help track changes, help identify potential problems before they become large	NONE	LOW to NONE	Appearance, clarity, and smell of water, abundance and appearance of aquatic plants, and appearance of sediments are all good indicators; very cost-effective; simple; requires little training.
Use rapid bioassessment techniques to monitor water quality	Marina basin; recommended where bioassessment protocols have been established	HIGH to MODERATE; provides information about the biological quality of marina waters.	MODERATE; can indicate water quality problems that might not be tested for in a water quality sampling program.	LOW; might have to train someone in aquatic invertebrate identification.	LOW	Cost-effective; not available for many waters

BMP Summary Table 2. (cont.) MANAGEMENT MEASURE FOR WATER QUALITY ASSESSMENT						
Best Management Practice Examples	**Marina Location & Usage**	**Benefits to Marina**	**Projected Environmental Benefits**	**Initial Cost Estimate**	**Annual Operation & Maintenance Cost Estimate**	**Notes**
Establish a volunteer monitoring program	Marina grounds and basin; universally recommended	HIGH to MODERATE; provides information about all aspects of the marina; actively involves marina patrons	MODERATE to HIGH; volunteers focus on different environmental issues and develop keen environmental awareness and concern	LOW; some basic equipment and training for volunteers will be necessary	LOW	Can help build public involvement; consult with state for guidelines; check EPA's web site, <www.epa.gov/owow/monitoring/vol.html>

4.3. Habitat Assessment

Management Measure for Habitat Assessment:

Site and design marinas to protect against adverse effects on shellfish resources, wetlands, submerged aquatic vegetation, or other important riparian and aquatic habitat areas as designed by local, state, or federal governments.

Management Measure Description

The construction of a marina in any waterbody can disrupt aquatic habitats. This management measure is important because of the value of protecting natural habitats so they continue to provide food and recreational opportunities for people, as well as food and shelter for plants and animals, and so their roles in the ecological health of waterbodies are protected. Past waterfront development has adversely affected many waterbodies, but our knowledge of ecology has increased. We now realize the importance of healthy aquatic habitats to both our health and the overall health of our waterbodies. Efforts to decrease the introduction of invasive and exotic species have increased, and minimizing pollution in waterbodies is widely accepted as a sound ecological and economic practice. In many cases, federal and state laws require analyses of the potential impacts on the natural environment before projects begin. This management measure focuses on marina siting and design and extends to assessments of how marinas can incorporate natural habitats into their siting and design.

When well designed and cared for, marinas can be a valuable habitat for plants and animals that are adapted to quiet, sheltered waters. Regardless of the type of waterbody on which a marina is to be constructed, siting it where its development or operation will diminish the biological or economic value of the surrounding habitats should be very carefully considered, especially if the potential site is near locations that have been given special designations by local, state, or federal governments. Such habitats might be fish spawning areas, shellfish harvesting areas, designated wetlands, beds of submerged aquatic vegetation (SAV), or areas where threatened or endangered species are known to occur. If a marina is properly designed and located, aquatic plants and animals should be able to continue to use the marina waters for the same activities (e.g., reproduction or feeding) that occurred in the waters before the marina's presence.

Marinas that have been operating for a while can provide sheltered, quiet waters for plants and animals that prefer this type of environment or for animals that need this type of environment during specific life stages, such as spawning. Where the surrounding environment has been developed and offers little in the way of natural habitat, such as in an urbanized waterfront district, a marina might provide a refuge for many species. A pollution prevention and control program, based on the management measures presented in this guidance, can help maintain or improve water and habitat quality for aquatic species.

The locations of all important aquatic and riparian habitats in a locality or waterbody might not be known. A visual survey by a biologist may be appropriate before any marina construction or expansion begins, and a specialist in aquatic habitat restoration can be contacted if marina management is considering modifying the marina to create good aquatic habitat in the marina basin. Geographic information systems (GIS) are being used increasingly to map biological resources in many states and show promise as a method of conveying important habitat and other siting information to marina developers and environmental

protection agencies. The state department of environmental protection or natural resources can be contacted for this type of information.

Applicability

This management measure is applicable to new and expanding marinas where site changes might affect wetlands, shellfish beds, aquatic vegetation, or other important aquatic resources or habitats.

Best Management Practices

♦ *Conduct habitat surveys and characterize the marina site, including identifying any exotic or invasive species.*

The first step in constructing a marina that will be compatible with the surrounding natural environment or expanding or modifying an existing marina to create a more natural environment is to characterize the environment of the proposed site or operational marina. Before marina development or expansion, critical or unique habitats, such as beds of submerged vegetation and shellfish beds, should be identified. The importance of the area that will be affected by development to aquatic organisms for spawning, feeding, or their overall survival should be assessed within the context of the entire waterbody (Figure 4-6). Equally as important, exotic plants and animals that could be problematic for marina operation should be identified. Table 4-1 lists some common exotic and invasive aquatic species in the United States. Once the site has been characterized, marina development or expansion can proceed in a way that minimizes adverse effects on aquatic life and habitats.

♦ *Assess habitat function (e.g., spawning area, nursery area, feeding area) to minimize indirect effects.*

An area proposed for marina development or expansion could be used seasonally by fish or other animals. Animals use special areas of many coves, shorelines, beds of submerged vegetation, rivers, streams, and estuaries for short periods of time—from a few nights to weeks—for particular life functions such as migration, spawning, and rearing young. Marinas can accommodate these special, short-term uses if marina designers and managers are aware of the need for the areas and the marina is built with the needs in mind.

Figure 4-6. Habitat assessment was used at Elliot Bay Marina (Washington) to design the marina to work with natural habitat function. Wide openings between rock groin-type breakwaters, docks, and beach give easy access to migrating juvenile salmon leaving Puget Sound, while providing good water circulation and tidal changes inside the marina basin. A man-made 1,500-foot-long sandy beach has replaced lost habitat, providing a feeding ground for young salmon. Schools of young salmon and herring move throughout the marina basin (USEPA, 1996: *Clean Marinas—Clear Value*).

♦ *Use rapid bioassessment techniques to assess effects on biological resources.*

Rapid bioassessment techniques, where they have been developed, provide cost-effective biological assessments of potential marina development sites. Rapid bioassessment uses biological criteria (usually invertebrate and fish populations) as indicators of the condition of a habitat. To apply rapid bioassessment to a marina development site or an operating marina, select biological communities at the proposed site or the operational marina are compared to the same biological communities at an undisturbed site in the same waterbody or a similar one. The biological health of the proposed site or marina basin is rated based on how favorably the invertebrate or fish communities there compare with those of the undisturbed site. Scores from rapid bioassessments are useful for determining whether a site is stressed by pollution or other factors, such as habitat alteration. Rapid bioassessment protocols for macroinvertebrates and fish in freshwater streams and rivers are being developed by many states, and a document on them is available from EPA at the web address

Table 4-1. Common Invasive and Exotic Species of the United States

Species	Distribution	Problems caused	Control Methods	Additional Information
Crustaceans				
Spiny water flea *Bythotrephes cederstroemi*	Throughout the Great Lakes and in some inland lakes	May compete directly with young perch and other small fish for food, such as *Daphnia* zooplankton; may wind up unseen in bilgewater, bait buckets, and livewells; fishing lines and downriggers are often coated with both eggs and adults	The spread of all exotic and invasive species can be controlled by: 1. Removing aquatic plants and animals from boats and trailers, including the anchor, trailer rollers and axle, propeller, and boat hull. 2. Draining all lake, bay, ocean, or river water from the boat before transporting it to another waterbody. 3. Disposing of any unwanted live bait on land. 4. Rinsing the boat and all equipment with high-pressure, hot water, especially if moored for more than a day. **OR** Drying everything for at least 5 days before putting the boat into another waterbody.	http://www.sg.ohio-state.edu/publications/nuisances/bythotrephes/fs-049.html http://www.sg.ohio-state.edu/publications/nuisances/bythotrephes/fs-049.html
Mollusks				
Zebra mussel (*Dreissena polymorpha*)	All of the Great Lakes and waterways in many states, as well as Ontario and Quebec; Map: http://nas.er.usgs.gov/images/currzm00.gif	Fouls underwater structures and intake pipes; can spread from one waterbody to another on trailered or transported boats; microscopic larvae may be carried in livewells or bilgewater; adults can attach to boats or boating equipment that is in the water		http://www..seagrant.unm.edu/exotics/fieldguide.html
Asian clam (*Corbicula fluminea*)	Found in 38 states. Map included on: http://nas.er.usgs.gov/mollusks/docs/co_flumi.html	Cause biofouling; cause problems in irrigation canals and pipes and drinking water supplies; alter benthic substrate and compete with native species for limited resources; currently introduced through bait buckets, passive movement via water currents, intentional introduction as a food item in markets		http://nas.er.usgs.gov/mollusks/docs/co_flumi.html http:/lionfish.ims.usm.edu/%7Emusweb/nis/Corbicula fluminea.html
Plants				
Eurasian Watermilfoil (*Myriophyllum spicatum*)	Map included on: http://nas.er.usgs.gov/plants/docs/my_spica.html	Form thick underwater mats of stems and vegetation, crowding out native water plants; may be spread by becoming entangled in boat propellers (a single segment of stem and leaves can take root and form a new colony)		http://nas.er.usgs.gov/plants/docs/hy_spica.html
Hydrilla *(Hydrilla verticullata)*	Map included on: http://nas.er.usgs.gov/plants/docs/hy_verti.html	Grows aggressively and forms thick mats in surface waters, blocking sunlight to native plants; alters physical and chemical characteristics of lakes; reduces foraging efficiency; affects water flow and water use; mainly introduced to new waters as castaway fragments on recreational boat motors and trailers and in livewells		http://nas.er.usgs.gov/plants/docs/hy_verti.html
Purple loosestrife *(Lythrum salicaria)*	All contiguous U.S. states except Florida; Map included on: http://www.dnr.cornell.edu/bcontrol/purple.htm	Rapidly degrade wetlands by crowding out native species; spread rapidly across North America because of absence of its natural predators (beetles native to Europe); seeds may be dispersed by water, wind, and in mud attached to animals, or root or stem segments can form new flowering stems		http://www.inhs.uiuc.edu/edu/VMG/ploosestrife.html
Water hyacinth *(Eichhornia crassipes)*	Map: http://nas.er.usgs.gov/plants/maps/ei_crass.gif	Dense mats reduce spawning areas for fishes and shade out benthic communities; can nearly block the diffusion of oxygen through the water-atmosphere interface and kill fish		

<http://www.epa.gov/owowwtr1/monitoring/rbp/index.html>.

♦ *Redevelop waterfront sites that have been previously disturbed and expand existing marinas.*

Waterfront areas that have been previously used for industrial or military purposes might make good locations for new marinas because they have been developed before, usually have all the necessary infrastructure, and minimize disturbances to aquatic habitats. Many sites suitable for recreational boating facilities may be located in existing urban harbors where shorelines have been modified by bulkheading and filling. The adverse environmental consequences of redevelopment are usually minimal, and redevelopment can improve water quality, expand upland habitats, beautify and expand shorelines, and provide additional public access.

Waterfronts that are converted from water-dependent uses, such as marinas and recreational boating, to non-water-dependent uses, such as residences, office space, and shopping areas, reduce the availability of sites for marina development. To protect against such conversion in areas that contain important habitat, a state may purchase the property or the development rights from existing water-dependent uses. To preserve an existing marina, for example, a state government could pay the difference between the market value for other non-water-dependent development, such as for condominiums, and the water-dependent value of the marina to the marina owner, and receive in return a guarantee that the site would not be converted to a non-water-dependent use. States can use this method to retain sites suitable for marinas, maintain access for boating uses of the waterways, prevent conversion to other uses, and reduce the base value for property taxes.

The Hammond Marina (Indiana) was built on a derelict brownfield industrial site with a steel mill slag shoreline. The area is now a pleasant and protected boating facility with an attractive public access area, and it is popular as a sportfishing site. The local economy has benefitted from the redevelopment, and shorelines, upland habitats, and aquatic habitat at the site have been tremendously improved (USEPA, 1996: *Clean Marinas —Clear Value*).

♦ *Consider alternative sites where adverse environmental effects will be minimized or positive effects will be maximized.*

An analysis of alternative sites (sites other than the one proposed) can be used to demonstrate which site is the most economically and environmentally suitable. Analysis of alternative sites and designs has been effectively used to reduce the effects of development (including effects on tidelands, stream courses, shorelines, wetlands, and submerged aquatic vegetation) at many proposed marinas, and to find sites with flushing characteristics better than those at the sites initially proposed.

Many marinas built on freshwater lakes and rivers over the past two decades are located on what are known as brownfields, or shoreland that had been modified and seriously abused by previous industrial facilities. Usually, these areas support little to no natural vegetation or habitats when they are first converted to marinas. The marinas have turned these areas into recreational sites and public access points and have provided sheltered areas with protected shorelines, where natural vegetation has been able to reestablish itself.

♦ *Create new habitats or expand habitats in the marina basin.*

Almost any surface placed in coastal or inland waters, and especially rough surfaces—including rocks, piles, piers, and floats—quickly becomes home to a host of plants, animals, and bacteria. The submerged parts of breakwaters, piers, and floating docks are excellent examples of this kind of "created" habitat. The plants that colonize these surfaces provide refuge for a variety of invertebrates and are a good source of food for juvenile fish, which in turn can attract sport fish (Figure 4-7).

♦ *Minimize disturbance of riparian areas.*

Riparian areas are the narrow areas along the banks of rivers, streams, lakes, ponds, reservoirs,

Figure 4-7. Oak Harbor Marina sign. Oak Harbor Marina (Washington) has used its marina waters to raise salmon for release. Volunteers built salmon pens, and more than 420,000 salmon have been released as a result of the program. Deep River Marina (Connecticut) was the site for a 3-year federal/state stocking program for Atlantic salmon. The Puerto Rico Department of Natural Resources' Fisheries Office is located in Puerto del Rey Marina (Puerto Rico) and uses part of the facility's clean waters for an injured sea turtle rescue and recovery program (USEPA, 1996; *Clean Marinas–Clear Value).*

and wetlands. They may be vegetated, or may be beaches or rocky areas. Vegetated riparian areas extract nutrients from runoff from the land as it moves toward the waterbody and from the water that constantly circulates along the banks of the waterbody. The nutrients make them very productive habitats, with biodiversity and biomass typically higher than those of adjacent uplands. Many processes important to the health of waterbodies occur in vegetated riparian areas, including the following:

- Large quantities of nutrients are absorbed as waters pass through riparian areas.
- Eroded soils and other pollutants are filtered out of the water and absorbed by riparian vegetation.
- Nutrients are modified from forms that can't be used by aquatic organisms to forms they can readily use.
- The vegetation in riparian areas serves as a refuge for species for nesting, hiding from predators, and foraging.

Beaches and rocky shorelines also provide habitat variety and are important to many aquatic organisms. Because of the importance of all types of riparian areas to the general health of waterbodies, minimizing disturbances to them during marina development can be beneficial. Creating favorable conditions for the presence of riparian or wetland areas within a marina basin might be an effective, low-cost way to improve water quality in the basin or increase habitat diversity in the basin, depending on site conditions and space limitations.

♦ *Use dry stack storage.*

An alternative to building new docks for expanding boating access and marina capacity is to build dry stack storage facilities, in which many boats are stored on vertical stands on very little land. Boats stored in dry stack storage do not leak antifoulants to the water and can be more easily maintained on land in protected hull maintenance areas, providing less opportunity for spillage directly to surface waters. Dry stack storage has minimal environmental effects, and where zoning restrictions permit it, it is an appropriate means to increase public access to waterways.

BMP Summary Table 3 summarizes the BMPs for Habitat Assessment mentioned in this guidance.

BMP Summary Table 3. HABITAT ASSESSMENT MANAGEMENT

MANAGEMENT MEASURE: Site and design marinas to protect against adverse effects on shellfish resources, wetlands, submerged aquatic vegetation, or other important riparian and aquatic habitat areas as designated by local, state, or federal governments.

APPLICABILITY: New and expanding marinas where site changes might affect wetlands, shellfish beds, aquatic vegetation, or other aquatic resources or habitats.

ENVIRONMENTAL CONCERNS: The construction of a new marina in any waterbody type has the potential to disrupt aquatic habitats; these habitats include fish spawning areas, shellfish harvesting areas, designated wetlands, beds of submerged aquatic vegetation (SAV), or the habitats of threatened or endangered species. Design and locate marinas to help support aquatic plants and animals occurring in the waters before the marina's construction; operate marinas as a valuable habitat for plants and animals that do well in quiet, sheltered waters.

HABITAT ASSESSMENT PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Conduct habitat surveys and characterize the marina site, including identifying any exotic or invasive species	Marina basin and shores; recommended for new marinas or major expansions	MODERATE to LOW; might be required by federal or state laws	MODERATE to HIGH; minimizes adverse effects on aquatic life and habitats during construction and expansion	MODERATE to HIGH	NONE	State and/or federal agencies might have site-specific information; they might be willing to assist with site characterization; see EPA's web site, http://www.epa.gov/owow/monitoring/bioassess.html, for further information
Assess habitat function (e.g., spawning area, nursery area, feeding area) to minimize indirect effects	Marina basin and shores; recommended for new marinas or major expansions	MODERATE to LOW; might be required by federal or state laws	MODERATE; ensures that aquatic organisms can continue to use marina waters for special or seasonal habitat uses	HIGH to EXPENSIVE	NONE	
Use rapid bioassessment techniques to assess effects on biological resources	Marina basin and shores; recommended where bioassessment protocols have been established	HIGH to MODERATE; provides information about the biological health of waters	MODERATE; helps to determine whether a site is stressed by pollution or other factors, such as habitat alteration	LOW; requires training in aquatic invertebrate identification	LOW	
Redevelop waterfront sites that have been previously disturbed and expand existing marinas	Marina basin and shores; universally recommended for new marinas in urban areas	HIGH; previously developed sites usually have all necessary infrastructure for marina usage; redevelopment may expedite the permitting process and have lower land purchase/lease costs	HIGH; reduces pressure to use undeveloped shore; aids in cleanup of previous pollution; might improve water quality and shore and upland habitats	HIGH to EXPENSIVE	MODERATE to HIGH	Local zoning and planning changes might be required
Consider alternative sites where adverse environmental effects will be minimized or positive effects will be maximized	Marina basin and shores; generally recommended for new marinas	MODERATE to HIGH; analysis can help find more appropriate and economically suitable locations; potential long-term savings on environmental protection	HIGH; alternative sites are usually those with less sensitive environments, aquatic or shoreline flora and fauna, or better flushing characteristics	MODERATE to HIGH	MODERATE to HIGH	All reasonable potential sites should be considered before marina development

BMP Summary Table 3. (cont.) HABITAT ASSESSMENT MANAGEMENT						
Best Management Practice Examples	**Marina Location & Usage**	**Benefits to Marina**	**Projected Environmental Benefits**	**Initial Cost Estimate**	**Annual Operation & Maintenance Cost Estimate**	**Notes**
Create new habitat or expand habitat in the marina basin	Marina basin; generally recommended	MODERATE to HIGH; "created" habitat can attract sportfish and improve fishing from shoreline or dock; improves marina appearance	HIGH; new habitats increase habitat diversity for more animals and plants and may cleanse runoff	MODERATE to EXPENSIVE	MODERATE to LOW	Riprap, new beaches in basin corners, and vegetated shorelines are examples of this kind of "created" habitat
Minimize disturbance of riparian areas	Marina basin and shores; universally recommended for new marinas or major expansions	MODERATE; retaining riparian or wetland areas within a marina basin can be an effective, low-cost means to improve water quality and reduce construction costs	HIGH; riparian areas cleanse runoff and basin water; improves and diversifies habitat for plants and animals	MODERATE to HIGH	MODERATE to HIGH	Riparian areas are the narrow vegetated areas along the banks of rivers, streams, lakes, ponds, and reservoirs. They are very productive and are important habitats for many land and aquatic animals. They are critical landscape elements.
Use dry stack storage	Marina land and docks; recommended wherever space and local ordinances allow	HIGH; can reduce all types of marina-related pollution in the marina basin	HIGH; reduces habitat disturbance in the marina basin	HIGH	MODERATE	Dry rack storage is applicable to shallow draft and low-height powerboats of less than approximately 40 feet LOA; use may require zoning changes; may conflict with scenic vista issues; increases upland impervious surface area

4.4. Shoreline and Streambank Stabilization

Management Measure for Shoreline and Streambank Stabilization:

Where shoreline or streambank erosion is a nonpoint source pollution problem, shorelines and streambanks should be stabilized. Vegetative methods are strongly preferred unless strectural methods are more cost-effective, considering the severity of wave and wind erosion, offshore bathymetry, and the potential adverse impact on other shorelines, streambanks, and offshore areas.

Protect shorelines and streambanks from erosion due to uses of either the shorelands ar adjacent surface waters.

Management Measure Description

Streambank erosion is used in this guidance to refer to erosion along nontidal streams and rivers.

Shoreline erosion is used here to refer to erosion in tidal portions of coastal bays and estuaries.

Erosion is a natural process that results from water acting on streambanks and shorelines. Erosion along a river or stream removes material from one area and deposits it elsewhere, and beaches are constantly and naturally eroded and resupplied with sediment from other areas. Streambank and shoreline stabilization may be needed where natural erosion is occurring to protect shoreline structures.

Induced erosion often occurs where soil, streambanks, or shorelines have been disturbed. Removing vegetation from any streambank or shoreline exposes soil to the erosive energy of waves and currents. Altering a watercourse (for instance, by installing a breakwater or a dam) or artificially affecting the course of water (perhaps by channelizing a river) can cause erosion because the manner in which energy is transmitted through a waterbody can be affected. In the latter case, erosion sometimes occurs far from the location of the channelization. Properly designed erosion control measures and structures can reduce natural as well as induced erosion.

In a marina, structural elements are often necessary to protect boats and the marina perimeter from waves or water current energy. Hence, the marina basin is often a fairly calm, nonerosive environment. Erosion can still occur along the perimeter, however, and wave energy reflected off a structure, such as an improperly designed breakwater, or from boat wakes may be a contributing factor. Bank erosion may result where it is desirable to hold a given slope. Scour along the bottom of a structure such as a breakwater or at the abrupt junction of two unlike materials, such as river bottom sediments and a cement boat ramp, can also be a problem. Bank erosion and scour can result in sediment filling in a marina basin (and the need for maintenance dredging) or erosion at the edges of a boat ramp. Minimizing shoreline erosion can protect marina shorelines and can reduce the need for or frequency of maintenance dredging. Less frequent dredging also reduces the need for proper and potentially costly disposal of dredged material.

A vegetated shoreline can minimize the transmission of wave energy to other locations. Vegetation is also a relatively low-cost means to stabilize a shoreline, and it can add a natural, attractive element to an otherwise engineered environment. Used by itself, vegetation is most effective where waves or currents are low in energy and the soil

is stable enough for plant growth. Another site factor conducive to vegetative stabilization is shallow sloped banks. Where wave or current energy is too strong for vegetation to gain a foothold, temporary structures can be used to protect vegetation until it can establish itself, or permanent structures might be necessary.

Permanent streambank or shoreline protection structures could be needed where wave or current energy is too great for establishing and maintaining vegetation. Some structural methods to stabilize shorelines and navigation channels are gabions, riprap, sloping revetments, bulkheads, jetties, and breakwaters. The first three dissipate incoming wave energy more effectively than the rest and usually result in less scouring than the last three. Bulkheads are appropriate in some circumstances where other preferred alternatives are not feasible. Vegetation can often be added at the edges of these structural elements to control erosion from storm water runoff and to serve as a landscaping element.

The type of perimeter stabilization might be dictated in both inland and coastal marinas by local variations in water level due to dam drawdown in a reservoir, natural fluctuation in a lake, or tides along the coast. In some of these instances, shoreline stabilization might not be practical. Because rivers are hydrographically complex and many factors need to be taken into account when determining how to correct erosive problems, shoreline stabilization might not be sufficient to eliminate an erosion problem. Streambank and river restoration projects, of which erosion is usually only a small part, can encompass anywhere from a small section of a river or stream to the entire watershed.

Herrington Harbour Marina South (Maryland) retained and enhanced much of the natural shoreline during a recent rebuilding, modernization, and expansion program. An old, failing bulkhead was removed, and rock riprap and filter cloth were placed on the regraded shoreline. Native shore species were planted along the shore, and nearby wetlands were cleaned and restored to native marsh grasses. Over a few years, the shoreline vegetation filled in and created a very attractive and effective buffer that helps control erosion and storm water runoff. Wildlife diversity also increased in the surrounding shoreline area, including several blue herons that have taken up year-round residence.

Some specialized locations along the banks of rivers, reservoirs, and lakes, however, may be ideal candidates for shoreline stabilization. Such locations may be severely eroded soils around a storm sewer discharge point, disturbed soils where a boat ramp has been installed or is in need of maintenance, or overused shoreline areas in or next to established recreational areas.

Examples of vegetative and structural methods are presented below. Before selecting any of them for a particular erosion problem, it is important to identify the cause of the erosion, which, especially in rivers and coastal environments, could be extremely complex. Selecting the appropriate technique to remedy an erosion problem might require analysis by a professional.

Applicability

This management measure is applicable to new and expanding marinas where site changes might result in shoreline erosion.

Best Management Practices

- *Use vegetative plantings, wetlands, beaches, and natural shorelines where space allows.*

Vegetative plantings, wetland enhancements, beaches, and preservation of natural shorelines, where feasible, can be the most effective means of shoreline stabilization. Plantings can be in the form of a grassed buffer strip that serves the triple purpose of shoreline stabilization, establishing a visually aesthetic area, and controlling polluted runoff. If natural wetlands are found or were present within the boundaries of a marina before its development, their preservation or re-creation can protect shorelines, dissipate low wave energy, provide wildlife habitat, and filter pollutants out of the water and storm water

runoff. A sloping beach is the best surface for attenuating wave action, though such beaches can occupy more space than other perimeter stabilization methods.

Establishing a "no wake zone" in nearshore, shallow aquatic areas can also be effective to reduce impacts from boat wave energy.

- *Where shorelines need structural stabilization and where space and use allow, riprap revetment is preferable to a solid vertical bulkhead.*

In some cases, primarily because of space limitations or elevation differences between the land and water surface, steep slopes are necessary within marinas. Riprap is a common and economical revetment that can withstand substantial wave energy. Its irregular surface also reduces wave energy transmission better than a solid vertical bulkhead does. Natural rock is the best material. Concrete rubble can be used, but its many flat surfaces transmit more wave energy than do irregular natural rocks. Gabions (rock in heavy-duty wire mesh baskets) can be used where a slope steeper than that which can be obtained with riprap is needed. Gabions function best where waves do not exceed 12 inches. The irregular surface of riprap revetment can provide habitat for shore and nearshore plants and animals.

- *Where reflected waves will not endanger shorelines or habitats and where space is limited, protect shorelines with structural features such as vertical bulkheads.*

Vertical bulkheads reflect waves and are not a good choice for shoreline stabilization where waves or surges occur in the marina basin and are not mitigated in the stabilization design. They are usually more costly to install than other forms of shoreline protection but might be necessary where boats are hauled and launched, where the marina cannot be moved farther into the water, and where valuable real estate needs protection. They can be constructed of concrete, treated timbers, steel, aluminum, or vinyl. Vertical bulkheads can be combined with riprap by placing the former at the upper portion of a bank and riprap along the lower edge. Scour protection at the toe of the bulkhead should be incorporated into the structural design.

- *At boat ramps, retain natural shoreline features to the extent feasible and protect disturbed areas from erosion.*

Near boat ramps, shorelines can be damaged during ramp construction. Shorelines are also susceptible to erosion from runoff that is channeled alongside the ramp (especially if the site has been sloped for the ramp), boat wakes, waves, and currents after initial installation. During boat ramp construction, therefore, retention of natural shoreline features to the extent possible generally saves maintenance or corrective costs later. Natural-appearing shorelines are also aesthetically appealing, and they can minimize the likelihood of invasion by unwanted or exotic plant species later.

BMP Summary Table 4 summarizes the BMPs for Shoreline Stabilization mentioned in this guidance.

BMP Summary Table 4. SHORELINE AND STREAMBANK STABILIZATION MANAGEMENT

MANAGEMENT MEASURE: Where shoreline or streambank erosion is a nonpoint source pollution problem, shorelines and streambanks should be stabilized. Vegetative methods are strongly preferred unless structural methods are more cost-effective, considering the severity of wave and wind erosion, offshore bathymetry, and the potential adverse impact on other shorelines, streambanks, and offshore areas.

APPLICABILITY: New and expanding marinas where site changes may result in shoreline erosion.

ENVIRONMENTAL CONCERNS: Erosion in any waterbody is a natural process that results when moving water and waves undermine, collapse, and wash out banks and shorelines. Banks erode along nontidal lakes, rivers, and streams; shorelines erode along intertidal portions of coastal bays and estuaries. Eroding streambanks and shorelines do not protect the land and structures during storm events. Such erosion contributes to nonpoint source pollution problems, turbidity, and shoaling increases the need for maintenance dredging in marina basins and channels. Vegetation and structural methods have been shown to be effective for mitigating shoreline erosion and for filtering pollutants from overland and storm water runoff.

SHORELINE AND STREAMBANK STABILIZATION PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Use vegetative plantings, wetlands, beaches, and natural shorelines where space allows	Marina shores and banks; generally recommended	MODERATE to HIGH; reduce frequency of maintenance dredging; provide recreational areas for customers; attractive; eliminate wave refraction	HIGH; effective shoreline stabilization that also filters pollutants from runoff and provides wildlife habitat	LOW to MODERATE	LOW to MODERATE	Includes vegetative plantings, wetland enhancements, beaches, and preservation of natural shorelines; suitable for low-energy waves and currents, low sloping shores. No-wake zones are also effective
Where shorelines need structural stabilization and where space and use allow, riprap revetment is preferable to a solid vertical bulkhead	Marina shores and banks; generally recommended	HIGH; revetments withstand substantial wave energy and reduce wave energy transmission; lowered erosion rate reduces need for maintenance dredging	HIGH; the irregular surface provides excellent habitat for aquatic plants and animals through reduced sedimentation and dissipated wave action	EXPENSIVE	LOW to MODERATE vertical bulkheads require ongoing maintenance; gabion baskets are subject to failure	Natural rock set over filtercloth is commonly used; concrete rubble transmits more wave energy; gabions permit steeper slopes
Where reflected waves will not endanger shorelines or habitats and where space is limited, protect shorelines with structural features such as vertical bulkheads	Marina shoreline, particularly in areas of deep water and boat lift/haulout wells; generally recommended	HIGH to MODERATE; easy to install; occupy little horizontal space	LOW; vertical surfaces reflect waves; can increase bottom scour along wall base; limit aquatic habitat	EXPENSIVE	NONE to LOW	Allows marinas to locate closer to shore; can help reduce dredging frequency
At boat ramps, retain natural shoreline features to the extent possible and protect disturbed areas from erosion	Boat ramp shores and banks; generally recommended	MODERATE to HIGH; can save on maintenance or corrective costs; retain the natural appearance of the shoreline	MODERATE to HIGH; reduce damage from boat wakes and waves, and currents; stabilize shoreline; retain habitat for plants and animals	MODERATE to HIGH	LOW to MODERATE	Refer to the boat launch ramp design booklet published by the States Organization for Boating Access (SOBA); blend shoreline features with functionality of the ramp and access ways

4.5. Storm Water Runoff Management

Management Measure for Storm Water Runoff:

Implement effective runoff control strategies that include the use of pollution prevention activities and the proper design of hull maintenance areas.

Reduce the average annual loadings of total suspended solids (TSS) in runoff from hull maintenance areas by 80 percent. For the purposes of this measure, an 80 percent reduction of TSS is to be determined on an average annual basis.

Management Measure Description

Any debris that is on the ground and light enough to be swept away by flowing rainwater or snowmelt can end up in lakes, reservoirs, ponds, rivers, streams, canals, bays, estuaries, or oceans. Sanding dust, paint dust and chips, copper and other heavy metals, and other such solids that are carelessly or inadvertently allowed to drop to the ground while maintaining or repairing a boat by sanding, pressure washing, or other abrasive methods can be swept up by the runoff of the next rainstorm. Oils, grease, solvents, paint drippings, and fuel spilled or dripped onto the ground can also be carried away in the runoff. Unless the runoff is controlled or treated in some manner, all of these pollutants end up in the marina basin, where they create unsightly surface films or float until they adhere to surfaces like boat hulls or docks. Some of these pollutants flow dissolved in runoff or attached to soil carried by the runoff. When they reach the marina basin, they sink with the soil to the bottom, are eaten by bottom-feeding fish or by filter-feeding shellfish, or settle onto the leaves of aquatic vegetation and clog their pores. Storm water that is treated in some way to remove these pollutants before they can reach the marina basin does not result in these problems.

The National Pollutant Discharge Elimination System (NPDES) was established to control pollutant discharges to the nation's waters, including those from storm water runoff. The 1987 amendments to the Clean Water Act mandated EPA to develop a tiered implementation strategy for the NPDES Storm Water Program. In response to the 1987 Amendments, EPA developed Phase I of the NPDES Storm Water Program in 1990. Phase I requires NPDES permits for storm water discharges from

- "Medium" and "large" municipal separate storm sewer systems (MS4s) that serve or are located in incorporated places or counties with populations of 100,000 or more people.
- Eleven categories of industrial activity, one of which is construction activity that disturbs 5 acres or more of land.

The 11 categories of industrial activities for which storm water discharge permits are required are defined at 40 CFR 122.26(b)(14). A permit is required for Standard Industrial Classification (SIC) codes 4493 (marinas) and 3732 (boatyards and boat builders that repair, clean, and/or fuel boats). Note that the North American Industry Classification System (NAICS) is replacing the U.S. SIC system and is scheduled to be completed by 2002. NAICS was developed jointly by the United States, Canada, and Mexico to provide new comparability in statistics about business activity across North America. NAICS numbers corresponding to the previous SIC numbers are provided in Table 4-2.

Table 4-2. Conversion of SIC to NAICS.

SIC		NAICS	
3732	Boat Building and Repairing		
	Boat Repair	81149	Other Personal and Household Goods Repair and Maintenance (part)
	Boat Building	336612	Boat Building
4493	Marinas	71394	Marinas

The second phase, known as Storm Water Phase II, was signed by EPA in October 1999 and published in the *Federal Register* on December 8, 1999. The Phase II Rule will bring many municipal separate storm sewer systems serving fewer than 100,000 people, census districts in counties with population densities greater than 1,000 per square mile, and small construction sites of between 1 and 5 acres into the NPDES permitting program by March 2003. Construction sites where more than 1 acre is disturbed will need to obtain a permit and implement BMPs to minimize erosion and pollutant runoff. The rule exempts from regulation facilities that have industrial materials or activities that are not exposed to rain or snow. The Storm Water Rule and further information on Phases I and II of the Storm Water Program can be obtained from EPA's web site for the point source permitting program: http://cfpub1.epa.gov/npdes.

Removal of TSS at the 80 percent level is practicable, and the management practices mentioned here, or combinations of them, can achieve this degree of pollutant removal if they are designed properly and the site is suitable for their installation and use. The 80 percent level also provides a high degree of protection for surface waters. Used properly, pollutant removal management practices can also reduce final TSS concentrations in runoff very effectively. Table 4-3 reviews the pollutant removal efficiencies of many storm water control practices. Tables in Appendix F compare the advantages and disadvantages of many storm water control practices and their costs.

The 80 percent removal of TSS is recommended for hull and engine maintenance areas, the runoff from which often contains higher levels of toxic pollutants than runoff from other parts of a marina property. Pollutants in runoff from the remaining marina property should be considered when designing an effective runoff pollution prevention system. If sufficient land area is not available on-site to install runoff systems, management practices that increase vegetative cover, reduce impervious surfaces, and include infiltration devices are practical solutions.

The principal pollutants in runoff from marina parking areas and hull maintenance areas are suspended solids (paint chips, sanding dust, and the like.) and organics (predominately oil and grease). Toxic metals (in antifoulant paints) from boat hull scraping and sanding tend to attach themselves to suspended soil particles and are carried to the marina basin with the particles.

Designing and operating a hull maintenance work area with a focus on pollution prevention is an excellent way to prevent dangerous pollutants from reaching the marina basin. Particularly effective practices are designating a specified area that has an impervious surface (cement, for example) for hull maintenance work; doing all hull maintenance work under a roof to prevent the area from getting wet; and channeling and draining runoff from other areas of the marina property away from hull maintenance areas so it won't pick up the pollutants associated with hull maintenance. Devices with controls that collect pollutants as they are produced, such as vacuum-based (or dustless) sanders, are also effective for preventing pollutants from entering runoff.

Pollutants can also be trapped, collected, or filtered after they are on the ground but before it rains. This can be accomplished by using street

Table 4-3. Effectiveness of management practices for runoff control (adapted from Caraco and Winer, 2000).

Runoff Treatment or Control Practice Category or Type	Median Pollutant Removal (Percent)							
	No. of Studies	TSS	TP	OP	TN	NOx	Cu	Zn
Quality Control Pond	3	3	19	N/A	5	9	10	5
Dry Extended Detention Pond	6	61	20	N/A	31	-2	29	29
Dry Ponds	9	47	19	N/A	25	3.5	26	26
Wet Extended Detention Pond	14	80	55	69	35	63	44	69
Multiple Pond System	1	91	76	N/A	N/A	87	N/A	N/A
Wet Pond	28	79	49	39	32	36	58	65
Wet Ponds	43	80	51	65	33	43	57	66
Shallow Marsh	20	83	43	66	26	73	33	42
Extended Detention Wetland	4	69	39	59	56	35	N/A	-74
Pond/Wetland System	10	71	56	37	19	40	58	56
Submerged Gravel Wetland	2	83	64	14	19	81	21	55
Wetlands	36	76	49	48	30	67	40	44
Organic Filter	7	88	61	30	41	-15	66	89
Perimeter Sand Filter	3	79	41	68	47	-53	25	69
Surface Sand Filter	7	87	59	N/A	31.5	-13	49	80
Vertical Sand Filter	2	58	45	21	15	-87	32	56
Bioretention	1	N/A	65	N/A	49	16	97	95
Filtering Practices[a]	18	86	59	*57*	38	-14	49	88
Infiltration Trench	3	100	42	100	42	82	N/A	N/A
Porous Pavement	3	95	65	10	83	N/A	N/A	99
Ditches[b]	9	31	-16	N/A	-9	24	14	0
Grass Channel	3	68	29	32	N/A	-25	42	45
Dry Swale	4	93	83	70	92	90	70	86
Wet Swale	2	74	28	-31	40	31	11	33
Open Channel Practices	9	81	34	*1.0*	*84*	31	51	71
Oil-Grit Separator	1	-8	-41	40	N/A	47	-11	17

Shaded rows show data for groups of practices (e.g., dry ponds includes quality control ponds and dry extended detention ponds).
Numbers in italics are based on fewer than five data points.
[a] Excludes vertical sand filters
[b] Refers to open channel practices not designed for water quality.
TSS = total suspended solids, TP = total phosphorus, OP = ortho-phosphorus, TN = total nitrogen, NOx = nitrate and nitrite nitrogen, Cu = copper, Zn = zinc.

sweepers and vacuums that collect debris from the ground, placing tarps under boats while they are being sanded or painted, and planting grass buffers around hull maintenance areas, parking lots, sidewalks, and other impervious surfaces where pollutants tend to accumulate. Grass buffers effectively filter runoff water before it reaches surface waters, and they are attractive landscape elements.

Covering areas that are not used for boat maintenance with a porous surface allows rainwater to filter into the ground and reduces the amount of runoff created on the marina property. Crushed gravel or concrete and low grassy areas interspersed around and within otherwise impervious areas (parking lots, for example) are surfaces that allow rainwater to infiltrate into the ground. Directing storm water to a grassed area instead of to drains, pipes, or cement channels is an effective way to prevent the pollutants in runoff from reaching the marina basin, regardless of whether the runoff originates from parking lots, hull maintenance areas, rooftops, or any other impervious surface.

Some marinas might need to pretreat storm water runoff before it is discharged to a local sewer system. Pretreating wastewater from hull cleaning (pressure washing) might also be needed. The state or local environmental agency should be contacted to determine any specific legal requirements for treatment before discharge.

The goal of 80 percent reduction in the load of total suspended solids (TSS) in storm water runoff recommended in this management measure is achieved by eliminating (by pollution prevention or source reduction) 80 percent of the total annual load of suspended materials produced in an average year of work. Most marinas use some management practices and are already collecting some or all of this 80 percent. Note that 80 percent of the TSS load cannot usually be eliminated during each storm because the efficiency of any means chosen to remove pollutants from storm water fluctuates above and below 80 percent for individual storms. The goal of the management measure is to control an average of 80 percent of the amount of TSS produced at a marina during any given year. Because no two marinas are the same, the storm water control management practices used to achieve this goal have to be chosen site-specifically for each marina.

The annual TSS load baseline can be calculated as follows:

- Assume that marina operations are being conducted as usual, except that no management practices are used to collect pollutants from hull maintenance areas. All of the sanding dust, paint chips, and so forth produced fall to the ground.
- Given this scenario, add together the total amount of solid pollutants, such as paint chips and sanding dust, that would be swept away in runoff during storms that occur over a 1-year period and that are less than or equal to the 2-year/24-hour storm for the area. Solids carried away in snowmelt runoff should also be included.
- Multiply this quantity by 80 percent (0.80) to obtain the target minimum quantity of solid pollutants to be removed from storm water runoff and prevented from reaching the marina basin or storm drain.

This calculation can be complicated, primarily because of the difficulty in measuring the quantity of pollutants produced at a marina. The state or local environmental agency can be contacted for additional storm water guidance and for information pertaining to storm water regulations.

Applicability

This management measure is applicable to new and expanding marinas and to existing marinas at a minimum at hull maintenance areas.

Best Management Practices

♦ *Perform as much boat repair and maintenance work as possible inside work buildings.*

Sandblasting is best performed in a place where the debris produced is prevented from drifting to surrounding areas and being swept away in storm water runoff. One of the simplest and most effective ways to prevent pollutants from boat repairs from entering storm water runoff is to

perform as much work as possible under roofs or in enclosures. Performing maintenance work in a fully enclosed building protects the work area from wind and contains the dust and debris produced during the work so it is much easier to clean up afterward.

♦ *Where an inside work space is not available, perform abrasive blasting and sanding within spray booths or tarp enclosures.*

The inside of a building provides the most protected space, but if a large enough interior space is not available, a suitably sized area can be protected with tarps or temporary plastic buildings can be used. Tarps help prevent residue from drifting to nonwork areas of the marina and into surface waters. Scheduling work on calm days helps ensure that wind won't carry debris and pollutants to other areas of the marina property and the marina basin.

♦ *Where buildings or enclosed areas are not available, provide clearly designated land areas for boat repair and maintenance.*

If a facility is large enough, one or more sections of the yard, ideally located well away from the shore, can be designated for boat repairs and maintenance (Figure 4-8). Mark the area well with signs, post a list of boat owner responsibilities, indicate the rules for use of the work area, and do not permit work outside the designated areas. Areas where abrasive work will be performed should be protected from wind and enclosed if possible. This practice should help the marina property stay relatively clean. Where possible, inland areas, away from surface waters, should be used for boat repair work.

♦ *Design hull maintenance areas to minimize contaminated runoff.*

Hull maintenance areas can be located indoors or outdoors, and activities that produce a large amount of polluting debris can be conducted over a dry, impervious surface like a cement pad. Other portable, temporary ground covers like tarps can also be effective. Such a surface makes it easy to collect and properly dispose of debris, residues, solvents, and spills before they enter storm water runoff.

Figure 4-8. Conanicut Marine Service (Rhode Island) found that purchasing land almost a mile from the shore and using a hydraulic boat trailer was significantly less expensive than purchasing waterfront property, and doing so allowed expansion of its service work to an inland boatyard. No coastal permits were needed for the inland yard, and the risk of water pollution from runoff from the yard was significantly reduced (USEPA, 1996: *Clean Marinas—Clear Value*).

♦ *Use vacuum sanders both to remove paint from hulls and to collect paint dust and chips.*

Vacuum sanders have proven very effective at capturing paint dust and chips during boat hull and bottom sanding. Immediate capture prevents paint dust and chips from entering the marina basin, makes cleaning up the work area easier. It also increases the speed at which a boat bottom can be completely sanded.

Such sanders capture up to 98 percent of the dust generated. Workers do not have to wear full suits with respirators. They use fewer disk pads and have less cleanup to perform in surrounding areas. Vacuum-based sanders are increasingly being used in boatyards and marinas, and they might be available for rental by boat owners who want to sand their own hulls. Many marinas have converted to dustless sanders and require that they be used by customers and outside contractors. In addition to preventing pollution, using vacuum sanders can dramatically increase the efficiency of sanding operations.

The results of a BMP demonstration project at five Rhode Island marinas showed that several techniques can make the use of vacuum sanders more effective. First, the availability of the machinery needs to be publicized with flyers or

signs in hull maintenance areas. Second, staff should be well trained and ready to inform customers that a professional vacuum sander is available for use and how to use it properly. Users need to be given complete operating instructions and must clearly understand them before using the machine.

♦ *Restrict the types and/or amount of do-it-yourself work done at the marina.*

Largely for environmental liability reasons, an increasing number of marina owners are restricting do-it-yourself boat repair work of the "dirty" kind, such as exterior sanding and painting. A small but increasing percent of marinas are prohibiting such repairs on-site unless done by a professional who is trained in, understands, and follows state-approved environmental management practices.

♦ *Clean hull maintenance areas immediately after any maintenance to remove debris, and dispose of collected material properly.*

Cleaning hull maintenance areas immediately after maintenance or repair work is done removes trash, visible paint chips, and other debris before they can be blown or washed into the marina basin. Spent sandblasting grit, boat repair debris, and solid waste should be stored under cover and in a manner that minimizes contact with process or storm water. Vacuuming or sweeping is an excellent method of collecting these wastes, especially over paved surfaces. Hosing a maintenance area for cleanup can result in the same pollution that storm water would cause.

♦ *Capture and filter pollutants out of runoff water with permeable tarps, screens, and filter cloths.*

Tarpaulins can be placed on the ground, before a boat is placed in a cradle or stand for sanding and painting. The common plastic tarpaulins collect paint chips, sanding dust, and paint drippings, which then can be collected and disposed of into dumpsters with other solid trash, as permitted by local or state ordinances. Impermeable plastic tarps, however, have their drawbacks. Wind easily blows dust and chips off the tarps, and rainwater washes debris from the tarps. Semipermeable filter cloths can be more effective than solid cloth or plastic tarps for collecting debris where wind is a problem, where tarps are not always cleaned each day after work is completed, or where work is continued during light rains. The filter cloths hold onto debris better and allow water to pass through while retaining debris for later disposal.

♦ *Sweep or vacuum around hull maintenance areas, roads, and driveways frequently.*

Frequent vacuuming of impervious areas can effectively prevent pollutants from reaching the marina basin and nonmaintenance areas of the marina property. Scheduling vacuuming (e.g., once a day or every other day during the boating season) and adhering to the schedule helps make this a particularly effective management practice. The practice is most effective in hull maintenance areas if the surface under any boat being worked on is swept at the end of each workday.

♦ *Sweep parking lots regularly.*

Cars, trucks, commercial vehicles, and foot traffic carry a lot of sand, grit, and dirt to parking lots. Gum wrappers, paper and styrofoam cups, cigarette butts, and cellophane wrappings tend to end up on parking lot pavement as well. Storm water carries these pollutants to the marina basin or to drain inlets, catch basins, and oil/grit separators. Regular parking lot sweeping helps reduce the amount of sand, grit, and trash that reaches the marina basin and storm water controls. Because catch basins and oil/grit separators require periodic cleaning for efficient operation, sweeping the parking lot extends the time between sweepings.

♦ *Plant grass between impervious areas and the marina basin.*

Grass retains and filters pollutants from runoff. A well-maintained lawn that is located between impervious surfaces (e.g., parking lots) and the marina basin and to which runoff from the impervious surface is directed increases rainwater infiltration and creates an attractive marina environment (Figure 4-9).

The technical term for a channel or ditch planted with grass and used for storm water treatment is *grassed swale*. Grassed swales are low-gradient

Figure 4-9. Storm water runoff is controlled at Deep River Marina (Connecticut) by 50-foot-wide grass buffers and a parking lot that is covered with crushed rock and has sediment traps in the storm drains. Picnic tables and flowers in the lawn areas make the marina visually attractive and useful to families. Summerfield Boat Works (Florida) added an unpaved parking lot across the street from the main marina property and basin and landscaped its perimeter to blend in with the neighborhood. Harbour Towne Marina (Florida) reduced runoff contamination by planting a grass buffer around the perimeter of the facility. The facility's parking is largely paved and drains to the buffer strip, and the grass adds a cooling and visually pleasing element to the marina property (USEPA, 1996: *Clean Marinas—Clear Value*).

channels that can be used in place of buried storm drain pipes (Figure 4.10). To effectively remove pollutants, grassed swales need to have only a slight slope and should be long enough to allow all of the pollutants in storm water to be filtered out. Because storm water is directed to them and storms are occasionally very strong, erosion-resistant vegetation such as deep-rooted grasses works best. The vegetation filters out pollutants and absorbs nutrients from the storm water, and runoff infiltrates into the ground as it is slowed by the grass in the swale. Grassed swales are best used in conjunction with other practices listed under this management measure.

♦ *Construct new or restore former wetlands where feasible and practical.*

If space and economy permit, consider restoring wetland vegetation that might have formerly existed at the edge of the marina basin or altering a portion of the basin perimeter to support wetland vegetation. Wetlands are extremely efficient at removing pollutants from water.

♦ *Use porous pavement where feasible.*

Pervious pavement has strength characteristics approximately equal to those of traditional pavement but allows rainfall and runoff to percolate through it. The key is the elimination of most of the fine aggregate found in conventional pavements. There are two types of pervious pavement, porous asphalt and pervious concrete. Porous asphalt has coarse aggregate held together in the asphalt with sufficient interconnected voids to yield high permeability. Pervious concrete, in contrast, is a discontinuous mixture of Portland cement, coarse aggregate, admixtures, and water that also yields interconnected voids for the passage of air and water. Underlying the pervious pavement are a filter layer, a stone reservoir, and a filter fabric. Stored runoff gradually drains out of the stone reservoir into the subsoil.

A porous surface can also consist of a coarse, permeable top layer covering an additional layer of gravel (Figure 4-11). Runoff infiltrates through the porous layer and into the ground. As storm water passes through the pavement, the gravel, and perhaps a perforated underground pipe system and then into the underlying soil, pollutants are naturally filtered out. Porous pavement helps recharge ground water and provides excellent pollutant removal (up to 80 percent of sediment, trace metals, and organic matter).

Other types of porous pavements might be suitable for walkways and areas that will not be subjected to heavy loads.

♦ *Install oil/grit separators and/or vertical media filters to capture pollutants in runoff.*

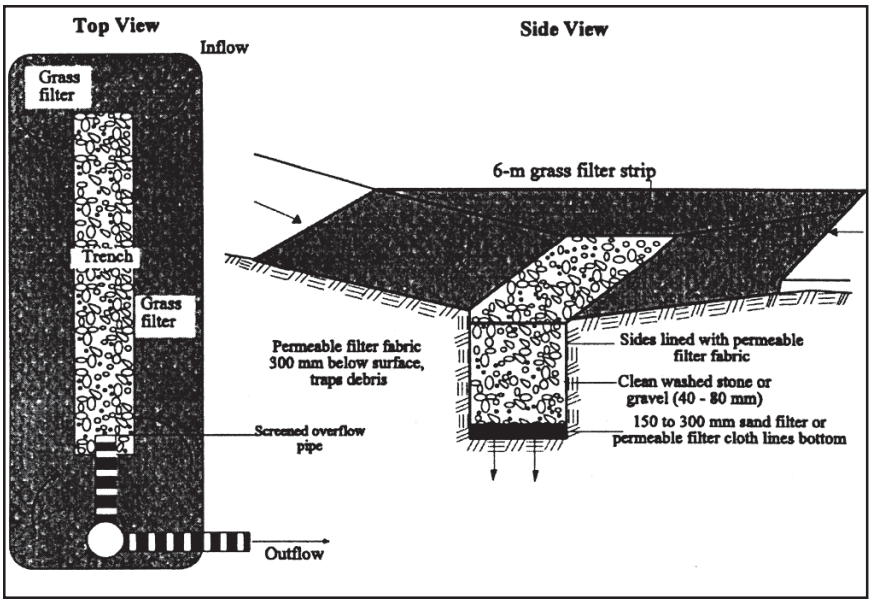

Figure 4-10. Grassed filter strip surrounding an infiltration trence (adapted from Schueler, 1987).

Oil/grit separators are useful where petroleum is spilled or could be spilled (Figure 4-12). Oil/grit separators can be used to treat water from small areas where other measures are infeasible. They are particularly applicable where the work performed contributes large loads of grease, oil, mud, or sand to runoff. Inspection and maintenance should occur at least twice per year or per the manufacturer's recommendations. With proper maintenance, oil/grit separators can last 50 years.

Vertical media filters use passive filtration to remove many pollutants from storm water. The pollutants removed include sediment, nutrients, soluble metals, hydrocarbons, trash, and debris. The filters are typically installed in high-use parking lots, industrial parking lots, roads, bridge decks, and multiple-use areas. A variety of filter media can be installed to capture different pollutants, and the number of filter media used can be adjusted, permitting the user to adapt the installation to the requirements of the specific location.

♦ *Use catch basins where storm water flows to the marina basin in large pulses.*

Catch basins with flow restrictions are used to prevent large pulses of storm water from entering the marina basin at one time. Particulates and soil settle to the bottom of a catch basin, in which the bottom of the basin is typically 2 to 4 feet below the outlet pipe (the pipe through which the trapped water is allowed to escape). The traps in a catch basin require periodic cleaning and maintenance, but if properly maintained, a catch basin should have a life span similar to that of oil/grit separators (50 years).

Catch basins can have a separate chamber filled with sand. With this design, runoff first enters an open chamber where coarse particles that could clog the sand are filtered out. The runoff then flows into a second chamber where other pollutants are filtered out by infiltrating through the sand. Catch basins with sand filters are effective in highly impervious areas, where other practices have limited usefulness. They need to be inspected at least annually, and the top layer of sand should be removed periodically and replaced with fresh, clean sand.

Figure 4-11. Lockwood Boat Works (New Jersey) regraded its combined parking and boat maintenance yard and surfaced it with 6 inches of crushed concrete to successfully control runoff. Using recycled concrete crushed into stone-sized pieces, the cost was $18,000 per acre installed, whereas crushed rock would have cost $27,000 per acre and asphalt paving would have cost $54,000 per acre (USEPA, 1996: *Clean Marinas—Clear Value*).

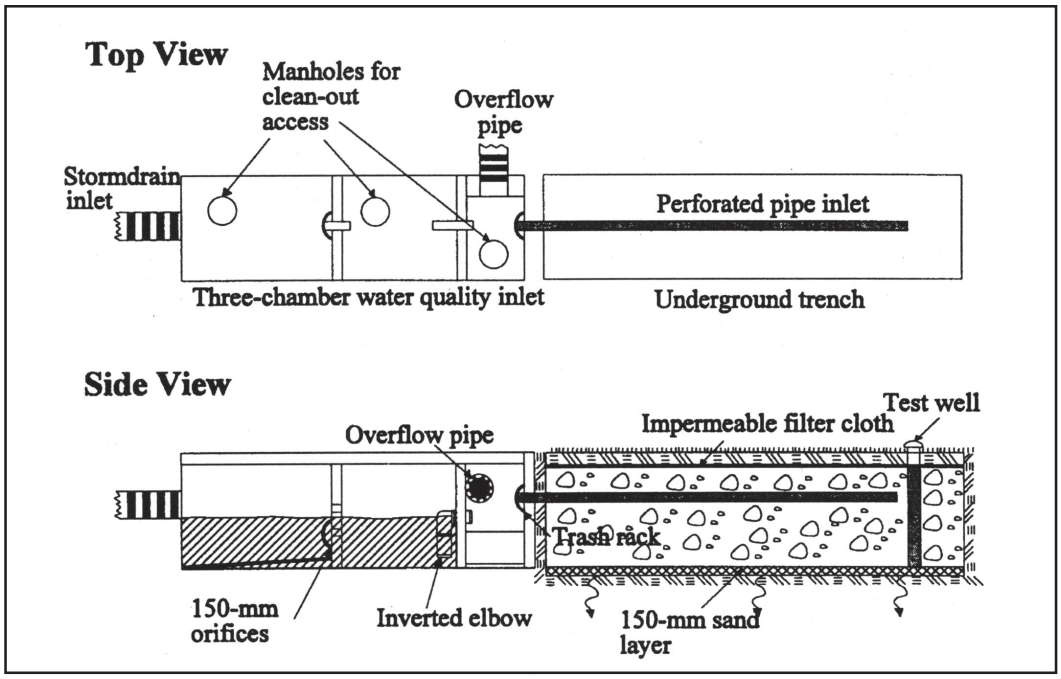

Figure 4-12. Underground trench with oil/grit chamber (adapted from Schueler, 1987).

♦ *Add filters to storm drains that are located near work areas.*

Some storm drain designs permit insertion of a filter to screen solid materials out of runoff. If oil is typically contained in runoff, an oil absorption pad can be inserted into the water pool or trap beneath the filter as well. Filters and absorption pads placed in storm drains must be cleaned or replaced regularly to function properly.

♦ *Place absorbents in drain inlets.*

Oil and grease are not ordinarily captured by catch basins. An absorbent material placed in a drain where it will intercept storm water can remove much of the oil and grease contained in runoff. Absorbent material products can remove 10 to 25 times their weight in oil. Absorption pads placed in drain inlets must be cleaned or replaced regularly to function properly.

♦ *Use chemical and filtration treatment systems only where necessary.*

Wastewater can be treated by the addition of certain chemicals that cause small solid particles to adhere together to form larger particles, which are then filtered from the water. This type of treatment system can remove more than 90 percent of the suspended solids and 80 percent of most toxic metals associated with hull pressure-washing wastewater. The degree of treatment is determined by how much of the chemical is added and the porosity of the filter used, and it can be altered to meet municipal standards. Because the chemicals used for this type of treatment require disposal themselves, this method of pollutant removal is suggested for use only where other methods prove ineffective. This type of treatment system might be regulated by the state or local environmental authority, and any regulatory restrictions for its use should be determined before choosing to use it.

BMP Summary Table 5 summarizes the BMPs for Storm Water Runoff control mentioned in this guidance.

BMP Summary Table 5. STORM WATER RUNOFF MANAGEMENT

MANAGEMENT MEASURE: Implement effective runoff control strategies that include the use of pollution prevention activities and the proper design of hull maintenance areas. Reduce the average annual loadings of total suspended solids (TSS) in runoff from hull maintenance areas by 80 percent. For the purposes of this measure, an 80 percent reduction of TSS is to be determined on an average annual basis.

APPLICABILITY: New and expanding marinas, and existing marinas at a minimum at hull maintenance areas.

ENVIRONMENTAL CONCERNS: Sanding dust, paint dust and chips, copper and other heavy metals, and other such solids that drop on the ground during boat repair and maintenance can all be swept into the water by the next rainstorm's runoff. Oils, grease, solvents, paint drippings, and fuel spilled or dripped onto the ground are also be carried away in runoff. Unless runoff is treated in some manner, all of these pollutants will end up in the marina basin, where they will create unsightly surface films or float until they adhere to a surface like a boat hull. Some of these pollutants can sink to the bottom soil, where they can be eaten by bottom-feeding fish or filter-feeding shellfish, or settle onto the leaves of aquatic vegetation and clog their pores.

STORM WATER RUNOFF MANAGEMENT PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Perform as much boat repair and maintenance work as possible inside work buildings	Boat maintenance area; universally recommended	MODERATE to HIGH; protects the work area from wind and rain; contains dust and debris for easier cleanup	MODERATE to HIGH; simple and effective way to prevent pollutants from entering storm water runoff	LOW if building exists to EXPENSIVE for new building	MODERATE	Temporary plastic buildings can be used
Where an inside work space is not available, perform abrasive blasting and sanding within spray booths or tarp enclosures	Boat maintenance area; universally recommended	MODERATE to HIGH; protects the work area from wind and rain; contains dust and debris for easier cleanup	MODERATE to HIGH	MODERATE	MODERATE	Schedule work on calm days to help ensure that debris and pollutants are not carried to other areas of the marina property and the marina basin
Where buildings or enclosed areas are not available, provide clearly designated land areas for boat repair and maintenance	Hull maintenance in designated upland areas; generally recommended	MODERATE; keeping all work in one area helps control pollutants	HIGH; keeping the work away from the water is an effective way to protect water quality	LOW to MODERATE	LOW to MODERATE	Protect from wind and capture debris using one of the BMPs mentioned (tarp, filter cloth, etc.)
Design hull maintenance areas to minimize contaminated runoff	Boat maintenance area; universally recommended	MODERATE to HIGH; debris collection and cleanup are easier when appropriate controls are in place	HIGH; decreases possibility that maintenance debris will enter waterbody with runoff	MODERATE to HIGH	MODERATE	Construct hull mainten-ance areas with an impervious surface like cement; mark the boundaries of maintenance areas with clear visible signs.

BMP Summary Table 5. (cont.) STORM WATER RUNOFF MANAGEMENT						
Best Management Practice Examples	**Marina Location & Usage**	**Benefits to Marina**	**Projected Environmental Benefits**	**Initial Cost Estimate**	**Annual Operation & Maintenance Cost Estimate**	**Notes**
Use vacuum sanders both to remove paint from hulls and to collect paint dust and chips	Hull maintenance areas; universally recommended	HIGH; perhaps the most efficient and effective practice; easy to use; saves cost of cleanup, improves quality and speed of hull work	HIGH; 98% effective at keeping sanding dust out of environment	LOW to MODERATE per unit	LOW per unit	Rental fee income can defray capital cost; vacuum sanders are desirable but not effective for some tasks
Restrict the types and/or amount of do-it-yourself work done at the marina	Hull maintenance areas; generally recommended	MODERATE; reduces debris production, non-compliance with marina rules, and staff time spent cleaning up	MODERATE; reduces debris produced at hull maintenance areas and surface water pollution	LOW	LOW	Do-it-yourself work can be appropriate where users first are thoroughly educated in pollutant reduction and privileges can be revoked for non-compliance. Restrict the types and/or amount of do-it-yourself work done at the marina
Clean hull maintenance areas immediately after any maintenance to remove debris, and dispose of collected material properly	Hull maintenance areas; universally recommended	MODERATE; daily cleaning of work areas reduces accidents, improves work quality, and increases customer satisfaction	MODERATE; reduces amount of maintenance debris and litter blowing around marina and into the water; sweeping keeps litter and sand out of storm drains	LOW	MODERATE	Minimize use of hose water for cleaning grounds because pollutants can be carried in the runoff
Capture and filter pollutants out of runoff water with permeable tarps, screens, and filter cloths	Upland and indoor maintenance areas; generally recommended	MODERATE; debris is more easily collected and disposed of into dumpsters with other solid trash, as permitted by local or state ordinances; inexpensive, reusable materials	MODERATE to HIGH for semipermeable filter cloths; LOW for impermeable plastic tarps	LOW	LOW	Where heavily used, tarps need daily cleaning and are subject to wind blowing and rain runoff; semipermeable filter cloth tarps are better
Sweep and/or vacuum around hull maintenance areas, roads, and driveways frequently	Marina upland areas; universally recommended	HIGH to MODERATE; sweeping reduces the need to clean the basin; keeps marina attractive	MODERATE to HIGH; regular sweeping keeps sand, grit, and debris out of surface waters	LOW; HIGH if mobile sweeper purchased	MODERATE	Clean grounds encourage boaters to keep the marina and waters clean
Sweep parking lots regularly	Marina parking lots and roads; universally recommended	HIGH to MODERATE; sweeping the parking lot will extend the time between cleanings of catch basins and oil/grit separators; keeps marina attractive	MODERATE to HIGH; regular sweeping keeps litter and sand out of storm drains and the water	LOW; HIGH if mobile sweeper purchased	MODERATE	Particularly important for porous pavement

BMP Summary Table 5. (cont.) STORM WATER RUNOFF MANAGEMENT

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Plant grass between impervious areas and the marina basin	Between marina work and parking areas and shoreline; generally recommended	HIGH; creates an attractive buffer, which add good appearance; if wide enough, can serve as recreation area for boaters	HIGH; lawn grass is a very effective buffer; retains and filters pollutants from runoff; absorbs nutrients from storm water; stabilizes the shore	MODERATE	MODERATE	A shallow ditch planted with grass and used for storm water treatment is a "grassed swale" regular maintenance is required
Construct new or restore former wetlands where feasible and practical	Shore and water edge; recommended where space allows	MODERATE to HIGH; wetlands are attractive shoreline habitat; attract customers	MODERATE to HIGH; wetlands are extremely efficient at removing pollutants from the water; act as natural buffers; reduce erosion	HIGH to EXPENSIVE	LOW to HIGH	Not suitable where land is limited; plantings can be hard to establish; but once established, require little or no maintenance
Use porous pavement where feasible	Marina parking lots and maintenance areas; generally recommended	HIGH to MODERATE; porous pavement can be cheaper than asphalt paving; reduced need for other elaborate/costly runoff control measures	HIGH; recharges ground water and provides excellent pollutant filtration through the ground	HIGH to EXPENSIVE	LOW to MODERATE	Suitable under certain conditions; requires frequent cleaning; not suitable for passage of heavy loads and equipment
Install oil/grit separators to capture petroleum spills and coarse sediment	Boat maintenance areas; generally recommended	MODERATE to HIGH; oil/grit separators should last 50 years with proper maintenance; minimal labor cost once installed	MODERATE to HIGH; efficient practice where the work performed contributes large loads of grease, oil, mud, sand, or trash to runoff	MODERATE per unit	LOW	Must be cleaned regularly; see manufacturer's specifications
Use catch basins where storm water flows to the marina basin in large pulses	Marina storm drains; recommended	MODERATE to HIGH; with proper maintenance, catch basins should last 50 years	HIGH; catch basins with sand filters are effective in highly impervious areas, where other practices have limited usefulness	HIGH	LOW	Traps of catch basins require periodic cleaning and maintenance
Add filters to storm drains that are located near work areas	Marina storm drains in work areas; generally recommended	MODERATE to HIGH; very low-cost; easy to get and replace; effectively filter out most large materials from runoff; simple and reliable	MODERATE to HIGH; screen larger solid materials out of water; not as effective for very small particles	LOW	LOW	Require periodic maintenance; held in place just below the drain cover

BMP Summary Table 5. (cont.) STORM WATER RUNOFF MANAGEMENT						
Best Management Practice Examples	**Marina Location & Usage**	**Benefits to Marina**	**Projected Environmental Benefits**	**Initial Cost Estimate**	**Annual Operation & Maintenance Cost Estimate**	**Notes**
Place absorbents in drain inlets	Marina storm drains and catch basins; generally recommended	MODERATE; oil pads and pillows absorb most petroleum products effectively; low cost and readily available; easy inspection and replacement	HIGH; remove much of the oil and grease from runoff; can remove 10 to 25 times their weight in oil from water	LOW	LOW	Absorbent materials need to be inspected regularly and changed periodically
Use chemical and filtration treatment systems only where necessary	Boatyard work and hull cleaning areas; recommended	LOW; very effective but very expensive practice	HIGH; these systems can remove in excess of 90% of suspended solids and 80% of most toxic metals from hull pressure-washing wastewater	HIGH to EXPENSIVE	HIGH to EXPENSIVE	Check with local or state environmental authority before installation because permits might be required

4.6. Fueling Station Design

Management Measure for Fueling Station Design:

Design fueling stations to allow for ease in cleanup of spills.

Management Measure Description

The possibility of spills during fueling operations always exists, and spills of gasoline and diesel fuel during boat fueling are a common source of pollution in marina waters. Most fuel dock spills are small and result from overfilling boat fuel tanks so that fuel splashes back at the nozzle onto the deck, squirts out of the boat's air vent line, or drips from the nozzle as it is removed from the boat and returned to the fuel dock. Therefore, installation of equipment that can minimize the occurrence of spills and taking precautions to contain, absorb, and minimize the spread of petroleum products spilled during fueling operations in navigable waters are prudent environmental practices at all marinas.

Congress passed the Occupational Safety and Health Act (OSHA) to ensure worker and workplace safety. Their goal was to make sure employers provide workers a place of employment free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions. OSHA has various regulations governing employee involvement in spill cleanups, including requiring training for such activities. Facilities are encouraged to have employees attend hazardous materials handling training or other appropriate training.

A form of fuel loss that occurs rarely but is particularly damaging is when fuel leaks from fuel pipes and hoses between the fuel storage tank and the pump. This leakage can result from dock damage caused by a major storm or a collision involving a large boat. Because boat fuels are lighter than water, they float on the water's surface and are easy to capture if spill containment and absorption equipment is readily available and used quickly.

The most effective way to minimize fuel spills and petroleum hydrocarbon pollution at a marina is to locate, design, build, and operate a boat fuel dock or station so that most spills are prevented and those that do occur are quickly contained and cleaned up. An essential step in spill prevention for both new and existing fuel docks is to identify and locate possible sources of leaks or spills, such as at joints in piping systems or between pipes and storage tanks, and to address each one in the facility's Spill Prevention, Control, and Countermeasures (or SPCC) Plan. An SPCC plan is a federal requirement (40 CFR Part 112) for any marina that has more than 660 gallons of petroleum in a single aboveground container, an aggregate of 1,320 gallons above ground, or more than 42,000 gallons under ground. The regulation requires that SPCC plans be certified by a professional engineer. Not all marinas are required to prepare and submit an SPCC plan, but if fuel is stored or transferred at a marina, even if only from a portable gasoline container filled at a distant gas station, being prepared to handle a spill is good environmental practice.

Oil is defined in federal regulations to include gasoline, diesel fuel, crude and refined oils, and petroleum-derived products like turpentine. Among the marine transportation-related facilities considered to have the potential to cause "substantial harm" to the environment are "onshore facilities capable of transferring oil to or from a vessel with a capacity of 250 barrels or more and deepwater ports." A barrel of petroleum contains 42 gallons, so 250 barrels translates to 10,500 gallons.

Rules for underground storage tanks (USTs) and UST systems (40 CFR Part 280) apply to all owners and operators of UST systems, except as noted in the regulations. Marinas with one or more stationary fuel storage tanks, above or below ground, with a combined storage capacity of 1,100 gallons or more of petroleum products are subject to federal and state bulk storage regulations for registration, testing, monitoring, replacement, reconditioning, closure, and/or removal. Fuel storage is also subject to other regulations, such as for occupational safety and fire. To ensure compliance with all applicable regulations, the state and local authorities should be contacted. Underground tanks with a capacity of 110 gallons or more are subject to federal underground storage tank (UST) regulations. UST regulations can be viewed on the EPA web site at <www.epa.gov/swerust1/fedlaws/index.htm>.

The location and design of fueling facilities also must meet applicable local, state, and federal regulations.

Applicability

This management measure is applicable to new and expanding marinas where fueling stations are to be added or moved.

Best Management Practices

♦ *Use automatic shutoffs on fuel lines and at hose nozzles to reduce fuel loss.*

A commercial fuel line shutoff can be located between the fuel storage tank and the dockside fuel pump. The shutoff automatically stops fuel movement when the system senses passage of a high volume of fuel through the line. The shutoff can also be manually closed when the fuel dock is not in operation or during emergencies. State and local codes might require shutoffs in specific locations.

Similarly, automatic shutoff fuel nozzles guard against overfilling boat fuel tanks by automatically stopping the flow of fuel from the pump. They are an excellent way to guard against spillage where marina patrons fill their own tanks. Fume return lines can also be used on automatic shutoff nozzles.

♦ *Remove old-style fuel nozzle triggers that are used to hold the nozzle open without being held.*

Old fuel nozzle triggers that hold the line open are illegal in some states because they can result in overfilling of fuel tanks and fuel loss out of air vents. Most new fuel nozzles automatically shut off when the tank fills. Check to see if the state you are in requires their use.

♦ *Install personal watercraft (PWC) floats at fuel docks to help drivers refuel without spilling.*

Special docking facilities for PWCs can be installed to stabilize them while they are at a fuel dock (Figure 4-13). Docking PWCs while fueling reduces fuel loss caused by the craft rocking on the water while fueling. These docks have proven popular with PWC operators and do reduce spillage.

♦ *Regularly inspect, maintain, and replace fuel hoses, pipes, and tanks.*

Regularly scheduled preventive maintenance is the best source control for fuel loss from the fuel storage and delivery system, and it is often less costly than cleanup costs and fines levied for spills. Many marinas are changing from underground storage tanks (UST) to aboveground, lined tanks. For EPA publications about USTs, call EPA's RCRA/Superfund Hotline at 1-800-424-9346 or visit the EPA web site at <http://www.epa.gov/swerrims/> (*InformationServices* link).

♦ *Install a spill monitoring system*

The U.S. Navy has designed a real-time monitoring system that can detect spilled crude and petroleum-based products 24 hours a day in any weather condition. The floating instrument detects sheen as well as emulsion layers below the surface, and it also determines the type of spill. Either the instrument is hardwired or the data from the instrument is telemetered to a base station, where associated software distinguishes between background levels and spills. The software can be set for continuous or discrete event logging data storage, and if a spill is detected, the base station automatically contacts authorities until a response is made.

Figure 4-13. Two PWC floating docks were installed at Winter Yacht Basin, Inc. (New Jersey). The floats are 4 feet by 10.5 feet and are connected to PVC pipes to allow them to ride up and down with the tide. Operators of PWCs can drive up onto the platform, step off, and fill the tank from the dock. The platform is stable enough to limit spilling during fueling. This practice has also decreased conflict between PWCs and larger boats at the fuel dock and has increased fuel sales at the marina (USEPA, 1996: *Clean Marinas—Clear Value*).

♦ *Train fuel dock staff in spill prevention, containment, and cleanup procedures.*

Marinas should have at least one key staff member fully trained and certified in spill management, and this person should be designated to be responsible for inspection, training, and control of any spill. Hazardous materials response training, such as 40-hour HAZWOPER training, is recommended. Contact the local agency responsible for hazardous waste response or a fire department for information. All staff members should know the location of absorbent materials and how to use them to remove the fuel immediately from the water or ground. Regular practice drills ensure that staff are familiar with the proper use of these materials.

♦ *Install easy-to-read signs on the fuel dock that explain proper fueling, spill prevention, and spill reporting procedures.*

Most states and some federal agencies have specific signage guidance. Signs with easy-to-follow instructions, perhaps using pictures, located on or near fuel pumps and fuel delivery locations can help expedite a cleanup if a spill occurs. It is helpful to have signs that state the following information:

- Step-by-step way to fuel a boat
- Requirements of the law and spill reporting phone numbers
- Procedures to follow in the event of a spill
- Locations of absorbent materials
- Proper use and disposal of fuel-absorbent materials
- Warnings against the use of detergents or emulsifiers.

Spills should be immediately reported to either the U.S. Coast Guard or EPA. The U.S. Coast Guard is the lead response agency for spills in coastal waters and deepwater ports, and EPA is the lead response agency for spills that occur in inland waters. Oil spills can be reported 24 hours a day at 1-800-424-8802. On navigable waters, any oily slick or sheen must be reported. More information on laws and regulations related to spills can be obtained at the U.S. Coast Guard web site: <http://www.uscg.mil/>. EPA's web site for oil spill information is www.epa.gov/oilspill.

♦ *Locate and design boat fueling stations so that spills can be contained, such as with a floating boom, and cleaned up easily.*

A well-positioned and well-designed fueling station allows for spill containment equipment, such as booms, to be easily deployed to surround a spill and any boats that may be tied to the fuel dock if a spill occurs. Fuel storage tanks, the fuel truck delivery area, and pipelines that deliver fuel to the pump are also sites of potential spills. Facilities that can be set back from the water should be so placed, and spill prevention equipment located at all likely places where spills could occur (such as at pipe junctions). Many marinas are switching from underground fuel storage tanks to aboveground tanks because the latter make spill detection and control easier and the capital costs are lower.

When a spill occurs at the boat fueling station, there are three basic steps to take, which need to

be considered when planning or rebuilding a fuel dock:

- Report the spill to the proper authorities (U.S. Coast Guard, EPA, and the appropriate state agency). Any spill can be reported by calling the U.S. Coast Guard's National Spill Response Hotline, 1-800-424-8802. Any petroleum spill onto the navigable waters of the United States sufficient to cause a slick or sheen on the water is a violation of section 311 of the Clean Water Act and must be reported to the hotline.
- Contain the petroleum spill to prevent it from spreading. Put a boom around and confine diesel and other nonvolatile oils. The U.S. Coast Guard recognizes that gasoline spills pose an extreme explosion and fire threat and recommends that small gasoline spills be allowed to evaporate as quickly as possible without a boom placed around them.
- Place materials on the water within the contained spill area to absorb the petroleum. If the spill is large, a commercial spill clean-up contractor may be needed.
- Remove and dispose of the material at the appropriate time. Contact the local spill control authority, a fire department, or the local U.S. Coast Guard for specific removal and disposal guidance.

Cap Sante Boat Haven (Washington) uses oil absorption booms anchored cross-current to capture floating oil. The booms are changed twice a year. The marina also uses about 800 oil absorption pads a year at a cost of $200. Battery Park Marina (Ohio) also uses an oil boom where the fuel line joins the floating dock, in case the connection leaks. These booms are replaced every 6 months at a cost of $25 each. Cedar Island Marina (Connecticut) keeps a pole with a small floating absorption boom attached at one end on its fuel dock to be used quickly and effectively by staff to sweep and mop the water surface if any small spills occur during boat fueling (USEPA, 1996: *Clean Marinas— Clear Value*).

♦ *Write and implement a fuel spill recovery plan.*

An SPCC plan is a first line of defense against petroleum pollution and should be developed by all marinas, whether required by regulations or not. An example plan is appended to the Petroleum Control Management Measure. An SPCC plan should be written to apply to all locations in the marina where fuel or oil is stored or transferred, and it should clearly explain spill emergency procedures, including health and safety, notification, and spill containment and control measures. Marina personnel should be trained in spill containment and control practices. The plan should address the following:

- *Who:* Clearly identify who is responsible for taking what action. Action items will include deploying the equipment and contacting the emergency agencies and additional cleanup services. The plan should contain a list, updated periodically, of emergency phone numbers to be used if a spill occurs. One person on the marina staff should be designated the official spokesperson for the facility.
- *What:* Define what actions should be taken if a fuel spill occurs and, based on likely threats, what equipment should be deployed. Include information on the type of spill equipment available on-site and its characteristics and capabilities. List emergency phone numbers to be called, including the U.S. Coast Guard and local fire department, when a spill is discovered. Make sure dispersants are *not* used on any spill.
- *When:* Clearly state when additional resources, such as spill control services, should be called for assistance. Plan when the marina's spill control equipment will be inspected and replaced, if necessary. A maintenance schedule for the equipment and a training schedule for staff should be established.
- *Where:* Show where the spill control material is located in the facility. Make sure storage lockers are clearly marked and easy to access. Identify sources where additional spill

response equipment can be obtained quickly if necessary. Potential sources include commercial spill response companies, fire departments, or neighboring marinas that have fuel spill response equipment. If a commercial fuel spill response firm is to be used, establish a prearranged agreement and cost estimates with the firm.

- *How:* Explain how the spill control equipment should be used and disposed of. To be sure that marina personnel understand the response plan, regularly conduct drills that simulate a fuel spill. Evaluate the drill and share observa-tions with all employees.

State and local regulations might have broader applicability than federal regulations and might even require an SPCC plan of any facility where fuel is stored or transferred. Contact the appropriate state and local authorities to determine if the facility needs to have a plan and for assistance in preparing one.

An example of an oil spill response plan is contained in Appendix B. In order that it is clear what type of information is to be entered for the plan, the example is filled out with explanations of the information to be filled in or as if it were for an actual marina. Information specific to this fictitious marina is printed in Arial font. Where this font occurs, the entries should be replaced with information specific to the actual marina for which the plan is being written, and the plan should be updated as changes in procedure, regulations, or the marina occur. Oil spill information is updated quarterly in EPA's "Oil Spill Program Update" on the Oil Program web site at <www.epa.gov/oilspill>.

♦ *Have spill containment equipment storage, such as a locker attached or adjacent to the fuel dock, easily accessible and clearly marked.*

Store the appropriate type and quantity of fuel spill containment and control materials in a clearly marked cabinet or locker that is easily and quickly accessible at the fuel dock. The type and quantity depend on the type of spill likely to occur and the potential quantity of a spill. Place absorbent pads and booms, a copy of the SPCC plan, and other important petroleum spill equipment in the locker. Effective fuel spill containment equipment is readily available from commercial suppliers. Booms can absorb up to 25 times their weight in petroleum products and float even when they are saturated. It's best to have enough length of boom to encircle the dock and the largest boat serviced, or a length of boom about three times as long as the longest boat serviced.

The following are examples of fuel/oil spill control products currently available:

- *Booms:* Usually 10-foot floating sections that interconnect to encircle the spill.
- *Pads:* Flat absorbent sheets that float; also called diapers.
- *Pillows:* Short booms often used in bilge of larger boats.
- *Bilge sock:* Small pillow for most boat bilges.
- *Filter:* Separates fuel from water.
- *Bilge switch:* Replaces float switch and shuts off when floating fuel layer is reached.

BMP Summary Table 6 summarizes the BMPs for Fueling Station Design mentioned in this guidance.

BMP Summary Table 6. FUELING STATION DESIGN MANAGEMENT

MANAGEMENT MEASURE: Design fueling stations to allow for ease in cleanup of spills.

APPLICABILITY: New and expanding marinas where fueling stations are to be added or moved.

ENVIRONMENTAL CONCERNS: Spills of gasoline and diesel oil during boat fueling are a common source of pollution in marina waters. Usually these are very small spills that occur from overfilling boat fuel tanks. These small spills may accumulate to create a larger pollution problem. The hydrocarbons in oil are harmful to juvenile fish, and to fish reproduction and genetics, and they interfere with the growth and reproduction of bottom-dwelling organisms. The oil and gas ingested by one animal can be passed to the next animal that eats it. In a marina, petroleum also deteriorates the white Styrofoam in floats and docks and discolors boat hulls, woodwork, and paint. Gasoline spills are also a safety problem because of the flammability of this product. The most effective way to minimize fuel spills and petroleum hydrocarbon pollution at a marina is to locate, design, build, and operate a boat fuel dock or station in such a manner that most spills are prevented and those that do occur are quickly contained and cleaned up.

FUELING STATION DESIGN PRACTICES

Best Management Practice Examples	Marina Location& Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Use automatic shutoffs on fuel lines and at hose nozzles to reduce fuel loss	Fuel hose nozzles; universally recommended	HIGH; automatic shutoffs prevent most back-splashing as tank fills; keeps fuel dock neater; reduces fire hazard	HIGH; greatly reduces volume of fuel spills from overfilling fuel tanks	LOW	NONE to LOW	A commercial fuel line shutoff can be located between the fuel storage tank and the dockside fuel pump; fume return lines can also be used on automatic shut-off nozzles
Remove old-style fuel nozzle triggers that are used to hold the nozzle open without being held	Fuel hose nozzles; universally recommended	HIGH; old-style nozzle triggers are illegal in some states	HIGH; greatly reduces possibility of fuel spills during filling; most fuel is spilled during tank filling, so this practice nearly eliminates this environmental impact	LOW	LOW	Replacing old nozzles is recommended
Install personal watercraft (PWC) floats on fuel docks to help drivers refuel without spilling	Fuel dock; generally recommended	HIGH; drive-on floats lift PWCs out of the water, stop vessel tipping, reduce spills, and increase fuel sales to PWC users; popular with PWC operators	HIGH; reduces fuel loss caused by rocking on the water, so less risk to the environment from fuel spills	MODERATE	LOW	Usually placed off to side where larger boats can't tie up; floating docks are available for PWC storage on the water
Regularly inspect, maintain, and replace fuel hoses, pipes, and tanks	Fuel storage area and fuel dock; universally recommended	HIGH; regularly scheduled preventive maintenance is the best way to prevent leaks from the fuel storage and delivery system; usually less costly than cleanup costs and resulting fines	MODERATE; reduces chance that persistent small leaks become a large pollution problem	MODERATE to HIGH	LOW to MODERATE	Biannually or more often, as necessary and prudent

BMP Summary Table 6. (cont.) FUELING STATION DESIGN MANAGEMENT						
Best Management Practice Examples	**Marina Location & Usage**	**Benefits to Marina**	**Projected Environmental Benefits**	**Initial Cost Estimate**	**Annual Operation & Maintenance Cost Estimate**	**Notes**
Install a spill monitoring system	Fuel storage system and pipes; recommended	HIGH; automatic detection of leaks	HIGH; reduces chance of unnoticed spills, increases chance of early detection	MODERATE to HIGH	LOW	Easy to install; software is Windows 95/98-compatible
Train fuel dock staff in spill prevention, containment, and cleanup procedures	Marina wide for staff at fuel dock; universally recommended	HIGH; done annually or more often, can reduce fire and environmental hazards; response staff must be fully trained and certified in spill management	MODERATE to HIGH	LOW	LOW	HAZWOPER training is recommended; regular practice drills ensure familiarity with proper response protocol
Install easy-to-read signs on the fuel dock that explain proper fueling, spill prevention, and spill reporting procedures	Fuel dock on or at pumps; universally recommended	HIGH; inexpensive and effective way to educate customers and remind staff; customers want and look for guidance on how to fuel boats	MODERATE; signs increase chance of proper spill response and can ensure spills of different types (e.g., oil and fuel) are responded to properly	LOW	NONE to LOW	Check with local, state, and federal guidelines; USCG might have recommendations
Locate and design boat fueling stations so that spills can be contained, such as with a floating boom, and cleaned up easily	Boat fueling dock; universally recommended	HIGH; makes spill containment easier and faster; reduces liability and cleanup costs and fines	MODERATE; fast cleanup reduces environmental harm	MODERATE to EXPENSIVE	LOW to MODERATE	Location considera-tions: ease of spill response, convenience for customers, proximity to pumpout
Write and implement a fuel spill recovery plan	All marina locations where fuel or oil is stored or transferred; universally recommended	HIGH; required by state regulations; helps reduce liability in case of a fuel spill when coupled with annual staff training and good records	MODERATE; increases chance that a spill will be quickly and efficiently contained, reducing environmental impact	LOW to MODERATE	LOW to MODERATE if annual staff training is included	Staff training required; provide clearly written instructions for customers if self-serve fueling
Have spill containment equipment storage, such as a locker attached or adjacent to the fuel dock, easily accessible and clearly marked	Fuel dock; universally recommended	HIGH; keeping all necessary cleanup material in a locker ensures that the equipment is easily reached and used quickly after a spill	MODERATE; ensures quick response to spills; reduces potential of harm to environment	MODERATE	LOW to MODERATE, depending on frequency of spills	Check with local authorities for appropriate types and quantities

4.7. Petroleum Control

Management Measure for Petroleum Control:

Reduce the amount of fuel and oil from boat bilges and fuel tank air vents entering marina and surface waters.

Management Measure Description

Fuel is easily spilled into surface waters from the fuel tank air vent while fueling a boat (if overfilling), and oil is easily discharged during bilge pumping. A small fuel sheen on the water surface near docked boats is not an uncommon sight and can be caused by a spill of only a few drops or a slow leak from a gas tank. Because of the properties of oil, a cup of oil can spread as a very thin oil sheen over more than an acre of calm water. Small amounts of oil spilled from numerous boats can accumulate to create large oil sheens. Gasoline spills are also a safety problem because of gasoline's flammability.

Hydrocarbons are dangerous to aquatic plants and animals both at and below the water surface. Less than half of spilled oil stays in the water; the rest evaporates. Spread over the surface, oil creates a barrier to oxygen movement across the water surface and to animals (for instance, insect larvae) that must breathe at the surface. At and below the surface, oil attaches to plant leaves, decreasing their respiration, and bottom sediments. It can also be ingested by animals directly, or indirectly by feeding on other organisms such as filter feeders (mussels, sponges) that have ingested the oil. The hydrocarbons in oil harm juvenile fish, upset fish reproduction, and interfere with the growth and reproduction of bottom-dwelling organisms. Some oil remains as sediment contamination.

Petroleum spills can also cause structural damage at marinas, such as discoloration on boat hulls, woodwork, and paint, and deterioration of white Styrofoam in floats and docks (because petroleum dissolves this material).

The practices discussed here are used in many marinas, and their use can minimize the entry of petroleum from fueling and bilge pumping into surface waters. Technologies such as air/fuel separators, oil-absorbing pads, and bioremedial pads and socks have been developed in response to a growing recognition of the ecological and cumulative damage that can be done by even small spills of petroleum products into surface waters. These small spills escape the attention of many people, and marina owners and operators can play an important role in bringing the importance of controlling this form of pollution to the attention of their patrons.

Applicability

This management measure is applicable to marina managers and boat owners. Although marina managers have no control over the implementation of many of the BMPs mentioned in this section, particularly those applicable to privately owned and operated watercraft, aware-ness of the issues associated with boat engines and their maintenance is important because engines are potential sources of nonpoint source pollution and their operation and maintenance have the potential to affect marina waters.

Best Management Practices

- *Promote the installation and use of fuel/air separators on air vents or tank stems of inboard fuel tanks to reduce the amount of fuel spilled into surface waters during fueling.*

Often during fueling operations fuel overflows from the air vent from the built-in fuel tank on a

boat. Attachments for vent lines on fuel tanks, which act as fuel/air separators, are available commercially and are easily installed on most boats. These devices release air and vapor but contain fuel before it can overflow. Marinas can make these units available in their retail stores and post notices describing their spill prevention benefits and availability.

♦ *Avoid overfilling fuel tanks.*

Fuel expands as it warms and the temperature in a boat's fuel tank usually is much higher than that in the storage tank, especially an underground tank. While fueling, a distinctive change in sound occurs when a tank is almost full. Filling can be stopped at this time, leaving a small amount of space in the tank to allow for expansion of the fuel with temperature changes. Without this space, fuel in a completely filled tank can spill out when the fuel expands. Automatic shutoff nozzles might not stop fuel flow before some fuel spillage occurs through the air vent, and listening for the sound of the almost-full tank is the best way to know when to stop filling. Having an oil absorbent pad ready to wipe up any drops is also a good fueling practice.

♦ *Provide "doughnuts" or small petroleum absorption pads to patrons to use while fueling to catch splashback and the last drops when the nozzle is transferred back from the boat to the fuel dock.*

Although few of us may be concerned about drops of fuel spilled onto the ground while we fill our car at the gas station, at the marina those drops can go directly into surface waters. There is no oil/water separator or catch basin to prevent drops at the marina fuel dock from entering the water, so using a little extra caution and taking precautions to prevent spills is good practice at the fueling dock. A doughnut placed over the fuel nozzle or a small absorbent pad in hand to catch any backsplash when the fuel tank is full and any drops that fall while the handle is replaced at the pump is an effective and easy way to prevent the small spills that can add up to big problems.

A small absorbent pad temporarily attached to the hull below the fuel tank air vent during fueling provides an added precaution against fuel spilling directly into surface waters. Pads that attach to vertical or horizontal surfaces with suction cups are commercially available. Properly dispose of all petroleum-containing materials as hazardous waste, or according to your local hazardous waste authority's recommendation.

> At Battery Park Marina on Lake Erie, staff cut absorption pads into squares, then cut an X-shaped hole in the center for the fuel nozzle to pass through. Any splashes while fueling are absorbed by the pad (USEPA, 1996: *Clean Marinas—Clear Value*).

♦ *Keep engines properly maintained for efficient fuel consumption, clean exhaust, and fuel economy. Follow the manufacturer's specifications.*

Well-tuned and maintained engines burn fuel more efficiently, improve mileage, and lower exhaust emissions. Mixing fuel for 2-cycle outboard engines according to the manufacturer's specifications (usually 50:1 fuel to oil) can help prevent inefficient burning.

♦ *Routinely check for engine fuel leaks and use a drip pan under engines.*

The best way to keep fuel and oil out of bilge water is to check for and fix small leaks, including making sure fuel lines are secure and inspecting them for wear.

♦ *Avoid pumping any bilge water that is oily or has a sheen. Promote the use of materials that capture or digest oil in bilges. Examine these materials frequently and replace as necessary.*

Marina operators can advertise the availability of oil-absorbing materials or can include the cost of installation of such material in yearly dock fees. A clause can be inserted in leasing agreements that requires boaters to use oil-absorbing materials in their bilges.

One oil spill response agent uses microbes to assist in cleaning up petroleum pollutants. Because it uses natural organisms, it is completely nonhazardous, nontoxic, and biodegradable. In independent tests by the National Environmental Technology Applications Corporation (NETAC), oil pollutants treated with the agent were reduced by up to 98 percent within 8 weeks.

The agent can be sprayed as a loose powder onto an oil spill, where it bonds with the oil and keeps it from sinking and harming aquatic life. Special socks containing the agent can be placed directly in boat bilges to absorb oil there. The socks can immediately absorb twice their weight in oil, and they continue to degrade oil so that one sock can be used for an entire boating season. Once the oil has been degraded, the agent degrades itself and the empty sock can be thrown away. Consumers should make sure that they are using an oil spill response agent that actually "eats" the oil rather than seemingly similar products that are pills made of biodegradable detergents. These are actually emulsifiers that only break oil down into smaller particles to be discharged into the water.

- *Extract used oil from absorption pads if possible, or dispose of it in accordance with petroleum disposal guidelines.*

If a container for recycling oil is available, boaters should place extracted oil into it. Recycled oil should be handled by a commercial waste oil hauler. If recycling is not an option, boat owners can place used pads in a sealed plastic bag and dispose of them with other oily wastes. All fuel- or oil-soaked materials should be stored together and removed by a certified waste hauler. Some booms can be cleaned and reused. Some materials can be recycled or burned as a heat source. If a marina doesn't have a used oil collection receptacle or program, a local department of environmental protection can be contacted for the location of the nearest used oil recycling station or collection point.

- *Prohibit the use of detergents and emulsifiers on fuel spills.*

Soaps, detergents, and emulsifying products should not be used on oil or petroleum spills because they only hide spills and seemingly make them disappear. They actually cause petroleum products to sink into the water, where the combination of fuel and detergent can harm aquatic life and make the pollutants difficult to collect. Use of detergent bilge cleaners is illegal and subject to a high fine imposed by the U.S. Coast Guard. Many bilge cleaners are actually detergents and their use should be discouraged as well because environmentally friendly alternatives exist.

BMP Summary Table 7 summarizes the BMPs for Petroleum Control mentioned in this guidance.

BMP Summary Table 7. PETROLEUM CONTROL MANAGEMENT

MANAGEMENT MEASURE: Reduce the amount of fuel and oil from boat bilges and fuel tank air vents entering marina and surface waters.

APPLICABILITY: Marina managers and boat owners.

ENVIRONMENTAL CONCERNS: Although more than half of the oil that spills into the water evaporates, less than a cup of oil can create a very thin sheen over more than an acre of calm water. Small amounts of oil spilled from numerous boats can accumulate to create a large oil sheen, that blocks oxygen from moving through the surface of the water and can be harmful to animals and larvae that must break the surface to breathe. The hydrocarbons in oil harm juvenile fish, upset fish reproduction, and interfere with the growth and reproduction of bottom-dwelling organisms. Oil and gas ingested by one animal can be passed to the next animal that eats it. In a marina, petroleum spills also dissolve the white Styrofoam in floats and docks and discolor boat hulls, woodwork, and paint. Gasoline spills, which evaporate quickly, are also a safety problem because of the flammability of gasoline.

PETROLEUM CONTROL PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Promote the installation and use of fuel/air separators on air vents or tank stems of inboard fuel tanks to reduce the amount of fuel spilled into surface waters during fueling	Boat; generally recommended	MODERATE benefit to boater; saves fuel and keeps hull cleaner	MODERATE; eliminates small but common spills from air vents	LOW	LOW	
Avoid overfilling fuel tanks	Fuel dock; universally recommended	HIGH; marina policy for staff and fuel dock customers will reduce small spills, saving cleanup costs and reducing visible oil slicks	HIGH; reduces small spills from air vent when boats return to slips as fuel warms up and expands	NONE	NONE to LOW	Fuel expands as it warms, and the temperature in a boat fuel tank might be higher than that in the fuel storage tank, especially an underground tank; very effective when coupled with installation of fuel/air separator in fuel vent line
Provide "doughnuts" or small petroleum absorption pads to patrons to use while fueling to catch splashback and the last drops when the nozzle is transferred back from the boat to the fuel dock	Fuel dock; universally recommended	HIGH; absorption pads are inexpensive and easily cut into smaller sizes for use by boaters; low technology and easy to use	HIGH; significantly reduces amount of small fuel spills in marina and visible petroleum sheens	LOW	LOW	If fuel absorbed is gasoline, do not store pad in an enclosed space until fumes have dispersed
Keep engines properly maintained for efficient fuel consumption, clean exhaust, and fuel economy. Follow the manufacturer's specifications	Marina area; universally recommended	LOW for marina; HIGH for boater; well-tuned and maintained engines burn fuel more efficiently; fewer exhaust fumes	HIGH; well-tuned and maintained engines produce fewer emissions and leak less to the water	LOW	LOW	

BMP Summary Table 7. (cont.) PETROLEUM CONTROL MANAGEMENT MEASURE

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Routinely check for engine fuel leaks and use a drip pan under engines	Boat storage area; recommended	MODERATE	MODERATE	LOW	LOW	Unattended boats with slow leaks can contaminate groundwater.
Avoid pumping any bilge water that is oily or has a sheen. Promote the use of materials that capture or digest oil in bilges. Examine these materials frequently and replace as necessary	Boats with inboard engines; universally recommended	MODERATE to HIGH; can sell oil-absorbing materials to customers; require that customers use oil-absorbing/ digesting materials in their bilges at all times while in marina	MODERATE to HIGH; an economical and effective approach to preventing release of oil in bilge water into surface waters	LOW	LOW	Prior to turning on the bilge pump, inspect the bilge to ensure that no oil or fuel is in the bilge water
Extract used oil from absorption pads if possible, or dispose of them in accordance with petroleum disposal guidelines	Marina; recommended	MODERATE; recycling and reusing (where possible) makes good economic sense	MODERATE to HIGH; recycling and reusing reduces raw material use	LOW	LOW	If recycling is not an option, boat owners should dispose of used pads in a sealed plastic bag for landfill disposal.
Prohibit the use of detergents and emulsifiers on fuel spills	Marina basin; universally recommended	MODERATE; using detergents is illegal and can result in fine by the U.S. Coast Guard	HIGH; soaps, detergents, and emulsifiers cause petroleum products to sink into water, making them impossible to remove	NONE	NONE	Because better alternatives exist, discourage use of detergent bilge cleaners

4.8. Liquid Material Management

Management Measure for Liquid Material Management:

Provide and maintain appropriate storage, transfer, containment, and disposal facilities for liquid material, such as oil, harmful solvents, antifreeze, and paints, and encourage recycling of these materials.

Management Measure Description

Marinas store a variety of liquid materials for boat and facility operation and generate various liquid wastes through the activities that occur on marina property. Adequate storage and disposal facilities are important if these materials are to be kept out of the environment. Proper storage is also important to ensure that liquid materials do not become contaminated while in storage and have to be disposed of prematurely. Marina patrons and employees are more likely to properly dispose of liquid wastes if adequate and safe disposal facilities are provided. Many states have mandatory or voluntary programs that address this management measure.

Proper storage and disposal of potentially harmful liquid materials can eliminate their entering marina waters and harming the aquatic environment, aquatic organisms, and marina or customer property. Liquid materials for sale or use at the marina, such as fuels, oils, solvents, and paints, should be stored in a manner that minimizes the chance of a spill and contains a spill if one occurs. Liquid wastes, such as waste fuel, used oil, spent solvents, and spent antifreeze, should be similarly stored until they can be recycled or disposed of properly.

Small quantities of many liquid wastes, including antifreeze, waste oil, pesticides, cleaners, solvents, and paints, can be harmful or deadly to people, wildlife, pets, fish, and other aquatic organisms. Discharge of these materials into marina waters not only is environmentally damaging but also destroys the overall clean, healthy environment that a marina can provide to its patrons. Dirty marinas affect boater satisfaction and present a poor image to prospective patrons. A clean marina reinforces the public image that boating is clean and that marinas are beneficial for the environment.

Regulations also play a role in proper liquid material and waste management. Approved spill protection materials and methods might be required by the local fire department and are necessary for marine environmental and liability insurance coverage. Regardless of whether a liquid waste material is eventually recycled or disposed of, careful documentation of how much material is collected, how it is removed from the facility, and where it is ultimately going is extremely important. These records are invaluable if there is ever any question from state or federal authorities about the marina's hazardous waste collection and disposal practices.

Marina staff and boaters should be informed about safe storage and disposal of liquid wastes. If a marina collects waste oil for recycling or disposal, precautions need to be taken to prevent contamination of one waste type with an incompatible type. Contaminated or mixed liquid wastes are very expensive to dispose of because commercial removal companies charge their highest rates for unknown mixtures. Some marinas have received costly fines by not controlling what is dumped into waste oil containers or who dumps materials into them. Holding tanks for liquid wastes should be kept locked, and a staff person should be responsible for moving waste from a collection site to the storage facility.

Applicability

This management measure is applicable to marinas where liquid materials used in the maintenance, repair, or operation of boats are stored.

Best Management Practices

With respect to all BMPs mentioned in this section, please consult with your state and local regulatory authorities for specific requirements and make sure your facility is in compliance. Where state and local regulations contradict the recommendations provided in this guidance, the facility must follow regulatory requirements.

- *Build curbs, berms, or other barriers around areas used for liquid material storage to contain spills.*

To contain spills, curbs or berms should be installed around areas where liquid material is stored. A general guide is to build berms or curbs to be capable of containing 10 percent of the total volume of liquid material stored or 110 percent of the volume of the largest container in storage, whichever is greater. Drains in the floor would defeat the purpose of the curbs or berms, so any drains present should be permanently closed.

- *Store liquid materials under cover on a surface that is impervious to the type of material stored.*

Containers of hazardous liquid materials are best stored in a protected place where rain will not lead to the containers' rusting and rupturing. It is equally important that the surface on which the containers are stored and of which the berms or curbs are made be impervious to the contents of the containers. If they aren't, a spill could quickly destroy the spill containment material and spread.

- *Storage and disposal areas for liquid materials should be located in or near repair and maintenance areas, undercover, protected from runoff, with berms or secondary containment, and away from flood areas and fire hazards.*

> Elliot Bay Marina (Washington) has its staff pick up almost any hazardous waste directly from the boat owner. This saves the potential high cost for disposing of hazardous materials that have been accidentally mixed by customers, thrown into dumpsters, or left on the dock where they could fall or leak into the water. This practice has worked well and has resulted in lower disposal costs, a spill-free marina, and happier customers who do not have to handle the waste product (USEPA, 1996: *Clean Marinas—Clear Value*).

- *Store minimal quantities of hazardous materials.*

A good idea is to conduct a regular review of the facility's hazardous materials inventory to identify any materials that can be stored in smaller amounts, or that are no longer needed or that have expired on the shelf. Buying only as much material as will be used within a year, or on a project basis, can save money and reduce waste.

- *Provide clearly labeled, separate containers for the disposal of waste oils, fuels, and other liquid wastes.*

Waste oils include waste engine oil, transmission fluid, hydraulic fluid, and gear oil. Waste fuels include gasoline, diesel, gasolines/oil blends, and water contaminated by these fuels. Other liquid materials of concern include used antifreeze/coolant, solvents, acetone, paints, and, if a restaurant is present, edible cooking oils and fats. Each of these liquids needs a separate container that is clearly marked to prevent mixing with other liquids and to assist in its identification for proper disposal. The containers should be covered in a

> Deep River Marina (Connecticut), Conanicut Marine Services (Rhode Island) and many other marinas use portable oil-changing units that use a vacuum tank to suction oil out of an engine through the dip-stick tube. The unit is rented to boaters for do-it-yourself oil changing (USEPA, 1996: *Clean Marinas—Clear Value*).

manner that prevents rainwater from entering them. Used oil filters are best drained before disposal by placing the filter in a funnel over the appropriate waste collection container. Waste should be removed from the marina site by someone permitted to handle such waste, such as a hazardous material contractor, and receipts and records of all materials disposed of and hauled away should be retained for inspection.

Paint cans with unused paint should be opened in well ventilated areas and left to dry until solid, then disposed of with normal trash. For information on how to handle particular types of hazardous wastes and which wastes are hazardous and which are not, contact a local extension service, waste hauler, or fire department.

♦ *Recycle liquid materials where possible.*

The decision to recycle is usually based on the type of waste and the availability of recycling facilities. Where a recycling program is available, consider participating and encouraging the participation of all marina patrons. Liquids that are often acceptable for recycling include waste or used oil and used antifreeze. Drop-off at a hazardous waste collection point may be necessary.

♦ *Change engine oil using nonspill vacuum-type systems to perform spill-proof oil changes or to suction oily water from bilges.*

♦ *Use antifreeze and coolants that are less toxic to the environment.*

Care should be taken to avoid combining different types of antifreeze/coolants. Propylene-glycol-based antifreeze (with a pink color) should be used because it is less toxic to the environment. Ethylene-glycol-based antifreeze (identifiable by its blue-green color) is very toxic to animals and should be recycled when it is used.

♦ *Use alternative liquid materials where practical.*

When possible, use low-toxicity or nontoxic materials, such as water-based paints and solvents and propylene-glycol antifreeze, in place of more toxic products. The use of nontoxic, high-bonding, easily cleaned coatings can be encouraged among marina patrons. Solvents with low volatility and coatings with low volatile organic compound (VOC) content are available, as are long-lasting and nontoxic antifouling paints.

♦ *Follow manufacturer's directions and use nontoxic or low-toxicity pesticides.*

At both marinas and boat launch sites, all pesticides (herbicide or insecticide) should be applied according to the directions provided on the container and should be applied by someone trained in pesticide application. All precautions should be taken to avoid allowing any pesticide to enter surface waters. Herbicides that are not toxic to aquatic life are safest to use. A local extension service is a good source of information on the relative safety of pesticides and where and when they can be safely applied. Using mulches in gardens and under shrubs can be as effective a method for controlling weeds and is more environmentally friendly than using herbicides.

♦ *Burn used oil used as a heating fuel.*

EPA permits burning used oil as a heating fuel (though some states might not permit it) if special high-temperature furnaces are used. This eliminates disposing of the used oil as a hazardous waste (Figure 4-14). Normally, the only oil that can be used as a fuel for high-temperature furnaces is that collected as part of normal maintenance and boat service work, but check with the furnace manufacturer. Also, verify that use of this system is permissible with the local environmental authority.

♦ *Prepare a hazardous materials spill recovery plan and update it as necessary.*

If large amounts of hazardous materials and/or wastes are stored even for short periods of time on marina property, a spill prevention and recovery plan should be adopted. The plan should list the types and volumes of materials that could potentially be spilled. This information is important because spill response action depends on the type of material spilled. A spill response plan for hazardous material can be integrated into an oil spill response plan and should include the same components:

- *Who*: Clearly identify who is responsible for taking what action.

Figure 4-14. West Access Marina (Illinois) installed a high-temperature furnace in 1993, which extended the marina's boat maintenance activities into and through the winter. The marina's engine maintenance service collects between 1,000 and 2,000 gallons of waste oil a year. It is collected in small containers and stored in a 1,000-gallon drum. The furnace burns very cleanly at 3,000 EF. The furnace saves the marina thousands of dollars each year in waste oil removal costs (USEPA, 1996: *Clean Marinas—Clear Value*).

- *What*: Explain what action should be taken during a spill event and, based on multiple scenarios, what equipment should be deployed.
- *When*: Specify when additional resources should be called for assistance.
- *Where*: Tell where the material is located in the facility.
- *How*: Explain how the equipment should be used and disposed of.

♦ *Keep adequate spill response equipment where liquid materials are stored.*

Equipment that is suitable for the variety of materials stored and can contain spilled material and prevent it from entering surface waters should be readily available near where spills are likely. Many hazardous materials do not remain on the water surface if they do enter surface waters, so absorbent materials should be used as soon as possible after a spill to contain them. These materials should then be disposed of properly.

BMP Summary Table 8 summarizes the BMPs for Liquid Material management mentioned in this guidance.

BMP Summary Table 8. LIQUID MATERIAL MANAGEMENT

MANAGEMENT MEASURE: Provide and maintain appropriate storage, transfer, containment, and disposal facilities for liquid material, such as oil, harmful solvents, antifreeze, and paints, and encourage recycling of these materials.

APPLICABILITY: Marinas where liquid materials used in the maintenance, repair, or operation of boats are stored.

ENVIRONMENTAL CONCERNS: Liquid material such as fuels, oils, solvents, paints, pesticides, acetone, cleaners, and antifreeze are potentially harmful or deadly to wildlife, pets, and humans and are toxic to fish and other aquatic organisms when they enter a waterbody. This is true for other types of liquid wastes such as waste fuel, used oil, spent solvents, battery acid, and used antifreeze. Waste oils include waste engine oil, transmission fluid, hydraulic fluid, and gear oil. Waste fuels include gasoline, diesel, gasoline/oil blends, and water contaminated by these fuels.

LIQUID MATERIAL MANAGEMENT PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Build curbs, berms, or other barriers around areas used for liquid materials storage to contain spills	Designated work area; universally recommended	MODERATE; reduces loss of spilled liquids; containment makes for easy, less expensive cleanup	HIGH; provides extra protection by ensuring that if spills or leaks do occur, the hazardous liquids will be contained and not enter the water	MODERATE to EXPENSIVE	LOW	Check with local and state authorities before implementing any of these BMPs because regulations vary from location to location
Store liquid materials under cover on a surface that is impervious to the type of material stored	Designated work area; universally recommended	HIGH; properly protected containers should not rust or rupture; saves on cleanup costs	HIGH; impervious surface protects against the spreading of harmful liquids into the ground ifa spill does occur	LOW to MODERATE	LOW	
Storage and disposal areas for liquid materials should be located in or near repair and maintenance areas, undercover, protected from runoff, with berms or secondary contain-ment, and away from flood areas and fire hazards	Designated work area; universally recommended	MODERATE; more convenient to have the liquids storage area located near repair and maintenance	MODERATE; keeping storage area away from flood zones and fire hazards reduces risk of spills, leaching, or explosion	MODERATE to HIGH	LOW to MODERATE	

BMP Summary Table 8. (cont.) LIQUID MATERIAL MANAGEMENT

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Store minimal quantities of hazardous materials	Designated work area; universally recommended	MODERATE; reduces inventory and spill potential	MODERATE; reduces potential for environmental damage due to leaks, spills, or explosions	LOW	LOW	Check Occupational Safety and Health Administration (OSHA) and Resource Conservation and Recovery Act (RCRA) regulations for applicability; check with local and state regulatory authorities before using these BMPs
Provide clearly labeled, separate containers for the disposal of waste oils, fuels, and other liquid wastes	Designated work area; universally recommended	HIGH; expensive for waste haulers to remove an unknown mixture of substances, cheaper if substances are known	HIGH; ensures that each type of waste will be properly handled and disposed of	MODERATE	LOW to MODERATE	
Recycle liquid materials where possible	Designated work area; universally recommended	MODERATE to HIGH; in some locations recycling is cheaper than disposal	MODERATE; benefits beyond the marina	LOW	LOW to MODERATE	
Change engine oil using nonspill vacuum-type systems to make spill-proof oil changes or to suction oily water from bilges	Marina docks and dry work areas; generally recommended	MODERATE; can be a profit source for marinas; easy to use off-the-shelf equipment	HIGH; spill-proof container keeps oil out of water; easy to carry to recycling container	LOW	LOW	
Use antifreeze and coolants that are less toxic to the environment	Designated work areas; universally recommended	MODERATE; lower toxicity products protect the marina property and customer health	MODERATE; less toxic propylene-glycol based antifreeze (with PINK color) is much less toxic to animals	None	LOW	
Use alternative liquid materials where practical	Designated work areas - universally recommended	MODERATE; less toxicity to environment and human health, generally work just as well as more toxic products	MODERATE; reduces use of toxic substances and possibility that toxins will enter the water	LOW	LOW	Liquids such as water-based paints, propylene-glycol antifreeze, solvents with low volatility, coatings with low volatile organic compounds, and longer-lasting or non-toxic antifouling paints can be used and promoted
Follow manufacturer's directions and use non-toxic or low-toxicity pesticides	Designated work areas; universally recommended	MODERATE; reduces risk to human health, pets, chilcren	MODERATE; reduces toxicity to aquatic life	LOW	LOW	Cooperative Extension Service can provide information on pesticide safety and use

BMP Summary Table 8. (cont.) LIQUID MATERIAL MANAGEMENT

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Burn used oil as a heating fuel	Designated work areas; universally recommended	HIGH; cost-saving measure because it eliminates cost of waste oil removal and extends maintenance activities through the winter	HIGH; any reuse of oil reduces the use of fossil fuels	MODERATE	LOW	Allowed only in special high-temperature furnaces; check with local and state authorities before using
Prepare a hazardous materials spill recovery plan and update it as necessary	Designated work areas; universally recommended	MODERATE; ensures more efficient cleanup in the event of a spill; helps reduce liability exposure	MODERATE; planning and training reduce chance and volumes of spills	LOW	LOW	May be integrated into an oil spill response plan
Keep adequate spill response equipment where liquid materials are stored	Designated work areas; universally recommended	MODERATE; having equipment available will control spills faster; helps reduce liability exposure	MODERATE; equipment must be suitable for the variety of materials stored	LOW to MODERATE	LOW to MODERATE	Many hazardous materials do not remain on the water, so absorbent materials should be used to contain them

4.9. Solid Waste Management

Management Measure for Solid Waste:

Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats to limit entry of solid wastes to surface waters.

Management Measure Description

This management measure is focused on controlling the solid waste that can collect at marinas and boat ramp sites if waste receptacles are not provided and conveniently located or if sufficient attention is not given to controlling waste produced during boat cleaning, maintenance, and repair activities. Many of the management practices that are useful for reducing solid waste production during boat maintenance activities are discussed under the Storm Water Runoff management measure because much of the solid waste produced during boat maintenance activities could potentially be carried to surface waters in storm water runoff. Please refer to the discussions of those management practices under the Storm Water Runoff management measure.

The purpose of this management measure is to prevent solid waste from polluting surface waters. Solid waste from boat cleaning, maintenance, and repair might contain harmful substances such as antifoulant paint chips or solvents used to clean or polish metal or wood parts. Solid waste from general activities and marina use, such as plastic bags, cups, cigarette butts, and food containers, also pollutes surface waters and degrades the habitats of aquatic animals and plants. The simple act of picking up and properly disposing of trash goes a long way toward preventing this form of nonpoint source pollution.

Marinas that appear clean because litter is not a visual problem are also more attractive to customers when they are shopping for a place to dock their boats or when the time comes to sign a new slip rental lease. Cleanliness at a marina can also lead to public recognition and to fewer complaints about flat tires or floating trash in slips. Substantial cleanup costs can be replaced by small initial investments in trash collection and preventive practices (Figure 4-15). The investment in some clean marina practices can be recovered by renting equipment such as dustless sanders or selling items such as filter cloth to boat owners.

Providing sufficient waste receptacles, separating wastes into classes of recyclables, and preventing litter are all accepted practices today and are part of customer service and environmentally friendly management at any public establishment. Marinas generate solid waste through boat maintenance, parties and small social gatherings on boats, restaurants, commercial activity at the marina, and the day-to-day operation of the facility

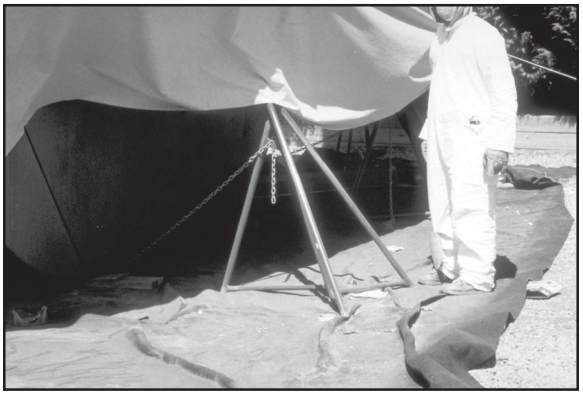

Figure 4-15. Filter cloths to capture debris. Port Annapolis Marina (Maryland) uses geotextile screening cloths to capture the normal sanding and scraping debris, as well as screws, nails, and other solid materials. This reduces cleanup time and improves appearance (USEPA, 1996: *Clean Marinas—Clear Value*).

(Figure 4-16). If adequate trash and solid waste disposal facilities are not available, solid waste is more likely to end up in surface waters or scattered on the marina grounds, from which it might be blown or washed into surface waters. Marina patrons and employees are more likely to properly dispose of solid waste if given adequate opportunity and disposal facilities. In fact, under federal law, marinas and port facilities must supply adequate and convenient waste disposal facilities for their customers.

Applicability

This management measure is applicable to all marinas. Many of the BMPs mentioned here are directed at boat owners and users, and the information is provided here so that marina managers are aware of the potential nonpoint source pollution problems.

Best Management Practices

♦ *Encourage marina patrons to avoid doing any hull maintenance while their boats are in the water.*

The quantity of debris discarded into the marina basin from boat maintenance activities can be minimized by limiting in-the-water boat maintenance to tasks (such as propeller work and hull inspection) that do not remove paint and other solid materials. Dustless sanders can be used for topside work in slips, and tarps can be laid out between a boat and the dock to catch any debris.

Figure 4-16. Vacuum sanders. Employees at The Lodge of Four Seasons Marina (Missouri) use vacuum or "dustless" sanders to prepare hulls for painting, reducing waste in the environment and cleanup time (USEPA, 1996: *Clean Marinas— Clear Value*).

It can be very difficult to do any hull maintenance while the boat is in the water without some debris falling into the water, and some marina managers require that all work be done on land. If feasible, limit in-the-water hull maintenance to cleaning, preferably without the use of cleansers. (See the Boat Cleaning management measure).

♦ *Place trash receptacles in convenient locations for marina patrons. Covered dumpsters and trash cans are ideal.*

Many people don't want to put their trash anywhere but in a trash receptacle. For these people, and to encourage those who might otherwise consider dropping trash on the ground to use trash receptacles, waste disposal facilities should be conveniently located near repair and maintenance areas, in parking lots, on docks, and in heavy-use areas, such as near grassy areas where people picnic and in parking lots. Covered trash receptacles do not fill up with water when it rains, do not lose their contents to strong winds, and are less likely to be invaded by scavenging mammals and birds. A loose cover also acts as an indicator that a receptacle is full. The best overfill prevention is frequent emptying by marina staff.

♦ *Provide trash receptacles at boat launch sites.*

Trash disposal can be a big problem at boat launch ramps. Boat launch sites are often the most convenient access point to waterbodies, and people from nearby areas, the non-boating public, or those not using the launch ramp for boat launching (e.g., those who use the site for picnicking, swimming, or shore fishing) deposit their trash in the receptacles provided for boaters at the site. If trash receptacles are provided at the launch site, this use can be expected, and a pick-up schedule should be arranged accordingly. Some states (e.g., Maine and Minnesota) have experimented with removing trash receptacles from boat launch sites because overflowing trash receptacles and litter strewn on the ground can result from providing trash receptacles that are insufficient to accommodate the trash from many users. Some people leave their trash atop an

overflowing trash receptacle or beside one rather than taking it with them, thinking it will be picked up by someone whose job it is to do so. Maine and Minnesota have found that when trash receptacles are removed the boating public generally does not complain and takes their trash with them. Litter can actually cease to be a problem after trash receptacles are removed in these instances. If it is decided not to provide trash receptacles, posting signs that ask people to "*Pack it out!*" can reduce the amount of trash left at the site.

♦ *Provide facilities for collecting recyclable materials.*

Recycling of nonhazardous solid waste such as scrap metal, aluminum, glass, wood pallets, alkaline batteries, paper, fishing line and nets, and cardboard is recommended wherever feasible. Recyclable hazardous solid waste such as used lead-acid batteries and used oil filters, should be stored on an impervious surface, under cover, and sent to or picked up by an approved recyclable materials handler. Often a recycling rebate is paid to the marina for each battery.

Where recycling is available through the municipality, it can be a cost-effective way to decrease trash disposal costs. Public education is necessary if a recycling program is to be effective, though today many people recycle at their homes and already have a "recycle" consciousness. Hazardous and nonhazardous wastes are collected for recycling separately.

Although recycling is a preferred disposal method for reusable materials, not all municipalities provide the service free of charge. Recycling can be performed in-house, but private service providers are often costly. In such a case, the quantity of waste produced can be lessened by reusing materials and sharing leftover cleaning and maintenance supplies (e.g., excess varnish and paint) among customers. A marina can place a bulletin board up for notices from patrons about extra supplies that are available or can provide some sort of materials exchange program.

The All Seasons Marina (New Jersey) cut its trash bill in half by taking advantage of the local solid waste recycling program. The Cap Sante Boat Haven (Washington) participates in a municipal recycling program and saves 10 to 20 percent on its annual trash removal bill. The marina rents 28 recycling bins from the town and places them at dock heads for customers' convenience (USEPA, 1996: *Clean Marinas—Clear Value*).

♦ *Encourage fishing line collection and recycling or disposal.*

Lost or discarded fishing line and netting in aquatic environments is extremely dangerous to aquatic life. Providing educational materials about the dangers these materials pose and receptacles or a location where marina patrons can dispose of unwanted fishing line and nets could help reduce the magnitude of the problem. Information on debris problems is available from the Center for Marine Conservation at <www.cmc-ocean.org>.

♦ *Provide boaters with trash bags.*

Boaters can be encouraged to bring all of the trash they generate while boating back to an onshore trash receptacle by providing them with a plastic bag or other suitable trash container. Imprinted with a marina's logo, the bag will carry the clear message that the marina cares about the environment.

♦ *Use a reusable blasting medium.*

New technologies are available that make use of a plastic blasting medium that can be reused several times until it wears out. The medium is used to remove antifoulant paint and is vacuumed into a hopper along with the debris for recovery, cleaning, and reclaiming (Figure 4-17). The much smaller volume of debris is collected and sent to a landfill.

♦ *Require patrons to clean up pet wastes and provide a specific dog walking area at the marina.*

Where floating piers extend far from the grassy areas of a marina, dog waste can become a problem, leading to many complaints from staff and boat owners. In many cities, dog owners are required to clean up after their pets when they

Figure 4-17. Associated Marine Technologies (Florida) took prevention of hull sand-blasting debris a step further by switching from a silica wet/dry sandblasting medium to a closed system that employs a reusable plastic material. The facility uses a high-capacity plastic-medium-blasting dry stripper and a media reclaimer that recovers the plastic material and separates it from the paint dust. This process significantly reduces the cost of cleanup and disposal, gives a higher-quality surface, and is much less aggressive on the gelcoats of fiberglass hulls (USEPA, 1996: *Clean Marinas—Clear Value*)

walk them on public streets and parks. A similar policy can take care of this problem at marinas.

BMP Summary Table 9 summarizes the BMPs for Solid Waste Management mentioned in this guidance.

BMP Summary Table 9. SOLID WASTE MANAGEMENT

MANAGEMENT MEASURE: Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats to limit entry of solid wastes to surface waters.

APPLICABILITY: All marinas. Many of the BMPs mentioned here are directed at boat owners and users, and information is provided here so that marina managers are aware of potential nonpoint source pollution problems.

ENVIRONMENTAL CONCERNS: Boat maintenance, painting and repair can result in a range of waste materials, such as sanding debris, antifoulant paint chips, scrap metal, fiberglass pieces, sweepings, and battery lead and acid. Other solid waste such as bottles, plastic bags, aluminum cans, coffee cups, six-pack rings, disposable diapers, wrapping paper, glass bottles, cigarette filters, and fishing line can come from general boating activities and marina use. Living organisms and the habitats of aquatic animals and plants are harmed by this type of debris after it enters the water. A litter-free marina is more attractive to present and potential customers. Reducing a marina's solid waste also reduces overall disposal costs.

SOLID WASTE MANAGEMENT PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Encourage marina patrons to avoid doing any hull maintenance while their boats are in the water	Marina dock area; recommended	MODERATE; less debris will end up in the marina basin, improving appearance	LOW to MODERATE; any maintenance work on a boat in a slip is more likely to pollute and harder to control; reasonable attempts at cleaner practices will reduce pollution going into the water	LOW to MODERATE	LOW to MODERATE	Ensure that any in-water boat maintenance does not remove paint from the boat hull
Place trash receptacles in convenient locations for marina patrons. Covered dumpsters and trash cans are ideal	Marina-wide; universally recommended	HIGH; convenient trash containers will be used if placed near access to docks; encourages staff and customers to help keep grounds clean	HIGH; covers control animal and bird access and prevent windblown litter from entering the water	LOW per unit	LOW to MODERATE	Secure containers near docks or the water to avoid accidental spillage; label containers to promote placement of different waste types in separate containers
Provide trash receptacles at boat launch sites	Boat launch sites; universally recommended	HIGH; a litter-free launch site is more attractive to boaters; encourages them to keep it clean	MODERATE; use of trash containers reduces volume of litter entering water	LOW per unit	LOW to MODERATE	Isolated public launch ramps may become household dump for residents in rural areas, a problem that has many states discouraging use of trash receptacles
Provide facilities for collecting recyclable materials	Marina-wide; universally recommended	MODERATE to HIGH; recycling decreases trash disposal costs; popular with the public; good for business image; scrap metals have highest cost recovery value	MODERATE; recycling has environmental benefits beyond the marina by reducing volume going to landfills, and as resource for manufacturers	LOW	LOW	Recycling is best done where provided through the municipality; clearly mark each receptacle for different type of recyclable

BMP Summary Table 9. (cont.) SOLID WASTE MANAGEMENT

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Encourage fishing line collection and recycling or disposal	Marina-wide; universally recommended	NONE to LOW; marina may be collecting trash it otherwise wouldn't have to dispose of	MODERATE to HIGH; entanglement in discarded or lost fishing line takes the lives of thousands of aquatic animals each year	LOW	LOW	Appropriate to combine with a public education effort
Provide boaters with trash bags	Marina work area; generally recommended	HIGH; encourages boaters to collect their trash and not discard it overboard, in the marina or at sea; reduces time spent on cleanup at marina	HIGH; all trash collected does not go into the water or blow around the marina as litter	LOW	LOW	
Use a reusable blasting medium	Marina work area; generally recommended	HIGH; cost savings can result by separating out dust and reusing blasting material	HIGH; significantly reduces volume of waste for disposal	MODERATE	MODERATE	More practical and cost-effective for high-volume boatyards, which do a lot of hull blasting
Require patrons to clean up pet wastes and provide an area specifically for dog walking at the marina	Marina-wide; universally recommended	HIGH; pet waste on docks, walks, and beaches is a serious complaint by marina customers; signs and use of pest waste disposal bags work and reduce complaints from other boaters; when dogs have a place to go, the docks and walks are cleaner; saves cost of staff time to clean up	HIGH; pet waste contains harmful bacteria, lowers water quality, and contaminates shellfish; BMP reduces the possibility that pet waste will enter the water; keeps waters clean	LOW	LOW	Signs should clearly mark the dog walkingarea as well as encourage patrons to clean up after their pets; providing disposable scoop bags encourages this practice and saves staff cleanup time.

4.10. Fish Waste Management

Management Measure for Fish Waste Management:

Promote sound fish waste management through a combination of fish-cleaing restrictions, public education, and proper disposal of fish waste.

Management Measure Description

Fish waste can create water quality problems at marinas where a lot of fish are landed. This might be the case where long piers or breakwaters provide access to deep water or accommodation for many fishers, where fishing tournaments are held, or at any marina during the local high fishing season. The waste from fish cleaning shouldn't be disposed of into a marina basin because of the chance of overwhelming the natural ability of the waterbody to assimilate and decompose it. The dissolved oxygen consumed by the decomposing fish parts can cause anaerobic, foul-smelling conditions. Unconsumed or floating fish parts are also an unattractive addition to the marina property. Fish waste is better disposed of in offshore waters (if the state allows) where the fish are caught, or treated as waste like any other and deposited in trash containers.

Proper disposal of fish waste by marina patrons helps keep marinas clean and free of waste. Although only a few marinas deal with large amounts of fish waste or fishing within the basin, sport fishers can be found at most marinas, and it is a good idea for marinas to promote proper fish waste disposal. Fish cleaning stations provide convenient places for marina patrons to clean fish and dispose of their waste material, and they help to keep the rest of the marina clean. Marina managers often find that once a good fish cleaning station is available to fishing patrons, the patrons gladly use it because gutting a fish at a fish cleaning station avoids the mess created on a boat or dock. Non-fishing marina patrons are likely to appreciate not having fish waste on docks or floating near their boats.

Some states prohibit fish waste from being discarded in nearshore waters and require that marinas prohibit the practice. Without a designated place to clean fish, docks, piers, and bulkheads can become dirty quickly.

Applicability

This management measure is applicable to marinas where fish waste is determined to be a source of water pollution. Many of the BMPs mentioned for this management measure are implementable by marina patrons and are not directly under the control of marina managers.

Best Management Practices

- *Clean fish offshore where the fish are caught and discard of the fish waste at sea (if allowed by the state).*

Fish waste can be disposed of in the offshore ecosystems from which the fish are caught. The quantity of fish waste produced from recreational fishing generally should not cause any water quality problems in open waters. Some states (such as Florida) require that all game fish be brought ashore intact for measurement by fisheries officials, and this management practice does not apply.

- *Install fish cleaning stations at the marina and at boat launch sites.*

A fish cleaning station is a particular area set aside for cleaning fish that have been caught. It typically has a cutting table large enough to accommodate a few to many people, a freshwater hose or other form of running water, and receptacles for the waste. Boaters and fishers can be

informed of the presence of the station and encouraged to use it. To keep the stations attractive and sanitary, they should be cleaned frequently, even as often as after each use. Making the station convenient to use and clean will encourage people to keep it clean themselves. Fish waste is placed in covered containers, and the collected waste is disposed of with other solid waste or by some other environmentally friendly means. (Refer to the next management practice.) If nutrient enrichment is not a problem in regional waters, fish cleaning stations can use garbage disposal units to grind the waste and then send the ground waste to a municipal sewer line for waste disposal. As always, when state or local regulations could be applicable, check with the environmental authority to determine whether they apply.

Where extensive fishing is done from a boat launch site, fish cleaning stations can be helpful. Fish waste disposal is a problem at boat launch sites because boaters return from fishing and usually want to clean their catch before they leave. Fish cleaning stations provide the ideal facility where fishers can gather to discuss their catch and clean it before heading home. As with a marina fish cleaning station, fish waste can be collected in covered containers and disposed of like regular trash or ground and emptied into a local sewage disposal system (where local regulations permit). An alternative approach would be to install an onsite disposal system with a holding tank, though this is not recommended where waterbodies have nutrient enrichment problems.

♦ *Compost fish waste where appropriate.*

A law passed in 1989 in New York forbids discarding fish waste, with exceptions, into fresh water or within 100 feet of shore. Contaminants in some fish leave few alternatives for disposing of fish waste, so Cornell University and the New York Sea Grant Extension Program conducted a fish composting project to deal with the more than 2 million pounds of fish waste generated by the salmonid fishery each year. In the demonstration project, fish parts were mixed with peat moss and the mixture quickly turned into an excellent compost suitable for gardens. The study found that even with this quantity of waste, if composting was done properly, the problems of odor, rodents, and insects were minimal and the process was effective. Another method of fish waste composting, described by the University of Wisconsin Sea Grant Institute, is suitable for amounts of compost ranging from a bucketful to the quantities produced by a fish-processing plant. A local Extension Service can be contacted for information on locally applicable composting procedures and equipment and where supplies can be purchased.

♦ *Freeze fish parts and reuse them as bait or chum on the next fishing trip.*

Fishers may consider recycling their own fish waste into bait for their next fishing trip. The fish parts from one fishing trip can be placed in a plastic bag, frozen, and then used on the next excursion as bait or offshore chum to attract game fish.

♦ *Encourage catch and release fishing, which does not kill the fish and produces no fish waste.*

The increasingly popular practice of "catch and release" by recreational and competitive fishermen is reducing the fish waste problem at many marinas.

BMP Summary Table 10 summarizes the BMPs for Fish Waste Management mentioned in this guidance.

BMP Summary Table 10. FISH WASTE MANAGEMENT

MANAGEMENT MEASURE: Promote sound fish waste management through a combination of fish-cleaning restrictions, public education, and proper disposal of fish waste.

APPLICABILITY: Marinas where fish waste is determined to be a source of water pollution. Many of the BMPs mentioned for this management measure are implementable by marina patrons and are not directly under the control of marina managers.

ENVIRONMENTAL CONCERNS: Sportfishing is very popular, but fish cleaning produces waste that can create water quality problems in marinas with poor circulation. Too much fish waste in a confined area can lower oxygen levels in the water, which leads to foul odor and fish kills. Floating fish parts are also an unsightly addition to marina waters.

FISH WASTE MANAGEMENT PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Clean fish offshore where the fish are caught and discard of the fish waste at sea (if allowed by the state)	Boats offshore; generally recommended	HIGH; a marina free of fish waste is more pleasant to current and potential customers	HIGH; dispersed disposal of fish waste in open water causes no ecological problems; fish parts become food for seabirds and other animals	NONE	NONE	Check to see if offshore disposal of fish waste is allowed; encourage this practice where permitted
Install fish cleaning stations at the marina and at boat launch sites	Marina near docks; generally recommended	HIGH; fish cleaning stations are popular; avoids the mess created from cleaning fish on boat or dock; can reduce complaints from other marina customers about waste	HIGH; keeps fish waste out of the water if properly used; does not attract sea birds which can foul boats, docks, and the water	LOW to EXPENSIVE	LOW to MODERATE	Waste can be disposed of like regular trash or ground-up and emptied into local sewage system (where local regulations permit)
Compost fish waste where appropriate	Marina near fish cleaning station; generally recommended	HIGH; excellent natural way to convert waste into useful mulch and soil additive for marina landscape use; reduces waste disposal costs	MODERATE; composted fish waste makes a very effective soil additive, which also organically fertilizes marina landscaping	LOW	LOW	Contact a local Extension Service for information on how to compost properly
Freeze fish parts and reuse them as bait or chum on the next fishing trip	Fish cleaning station; generally recommended	HIGH; when practical, reusing fish parts for bait keeps waste out of marina	HIGH; produces no waste in the marina	NONE	NONE	Educate boaters to encourage this practice; a practical idea, but may not have occurred to all fishers
Encourage catch and release fishing, which does not kill the fish and produces no fish waste	Boats offshore; universally recommended	HIGH; keeps fish waste out of marina	HIGH; produces no waste; returns fish alive to their habitat	NONE	NONE	Can be a way to involve people who don't fish in an environmentally friendly way

4.11. Sewage Facility Management

Management Measure for Sewage Facilities:

Install pumpout, dump station, and adequate restroom facilities at marinas to educe the release of sewage to surface waters. Design these facilities to allow ease of access, and post signage to promote use by the boating public.

Management Measure Description

Boat sewage can be a problem when discharged into surface waters without pretreatment. It is similar to situations in which discharges of municipal sewage close beaches when heavy rainstorms overburden sewer systems and rainwater mixed with raw sewage is discharged directly to surface waters through combined sewer overflows. Sewage from boats is more concentrated than that from either combined sewer overflows or sewage treatment plants because marine heads use little water for flushing and the sewage in marine heads is not diluted by water from bathing, dishwashing, or rain. Boat sewage contains nutrients that can stimulate growth of aquatic plants (algae and large aquatic plants) and pathogens (fecal coliform bacteria and viruses), which can cause human health problems directly through contact in the water or indirectly through the consumption of contaminated seafood.

Progress has been made toward eliminating discharges of sanitary waste from boats with the designation of no discharge zones, installation of pumpouts nationwide, and growing number of boater education programs. Efforts to reduce sewage discharges and to educate boaters about the damage they cause need to continue, and marinas can play a direct and important role in these matters.

Pumpout facilities and restrooms should be installed at new marinas and, where feasible, at existing marinas. Most states encourage the installation and use of pumpouts through the federal Clean Vessel Act (CVA) Grant Program and boater education.

Boaters and marinas are usually not considered primary sources of pathogen contamination in surface waters. Measurements of fecal coliform (*Escherichia coli)* bacteria are used as an indicator of sewage contamination in surface waters. It is often hard to attribute high coliform bacteria levels directly to any particular source, and within an area many potential sources are often present. Background coliform levels from runoff polluted with pet waste and droppings of waterfowl can be high, septic systems in an area might be poorly maintained or operating improperly, municipal sewage systems might have leaks, and boaters in marinas might be discharging untreated or insufficiently treated waste into surface waters. This management measure addresses all potential sources of sewage pollution to surface waters. Boaters and marinas, in particular, have a vested interest in clean waters, because the livelihood of marinas and the recreational benefits boaters derive from use of the waters are clearly linked to clean water.

Type I and II marine sanitation devices (MSDs) are used to pretreat boat sewage before discharging it overboard (except in a no discharge zone) if not prohibited by local ordinances. In an area designated as a no discharge zone, MSDs of all types must be configured to prevent discharge to surface waters and all sewage must be pumped out. Type III MSDs are holding tanks. They must be emptied into sewage treatment systems and cannot be discharged overboard. It is strongly recommended that holding tanks equipped with Y-valves have the valves in the closed position to prevent accidental discharge into boating waters. Pumpout use and no discharge zone designations have improved

water quality in many areas, so that shellfishing and aquaculture, once prohibited because of high bacterial concentrations, are allowed again. A description of the types of MSDs is provided in Section 3.

Chemicals are used in holding tanks to retard the normal aerobic digestion of sewage and release of noxious odors. Some concern has been expressed about the effect that these chemicals might have on municipal sewage treatment systems (that is, the possibility of interfering with bacterial digestion in the first stages of sewage treatment) when boater sewage is transferred to a municipal sewage system. Studies of this effect have found that neither the chemicals nor the concentration of marine wastes is a problem for any properly operating public sewage treatment plant.

Two of the most important factors in successfully preventing sewage discharge from boats are providing adequate and reasonably available pumpout facilities and conducting a comprehensive boater education program. Congress passed the Clean Vessel Act (CVA) in 1992 to help reduce pollution from vessel sewage discharges by providing funding to states for the installation of adequate pumpout facilities (Figure 4-18). The act established a 5-year (1992–1997) federal grant program administered by the U.S. Fish and Wildlife Service that authorized funding from the Sport Fish Restoration Account of the Aquatic Resources Trust Fund for use by states. The act was renewed for a second 5-year period in 1998. Grants are available from the CVA grant program to both private and public marinas for the construction, renovation, operation, and maintenance of pumpout stations and waste reception facilities. Further information about CVA grants and the grant program is available at the U.S. Fish and Wildlife web site at <http://fa.r9.fws.gov/cva/cva.html>.

Applicability

This management measure is applicable to marinas where adequate pumpout, dump station, and restroom facilities do not exist.

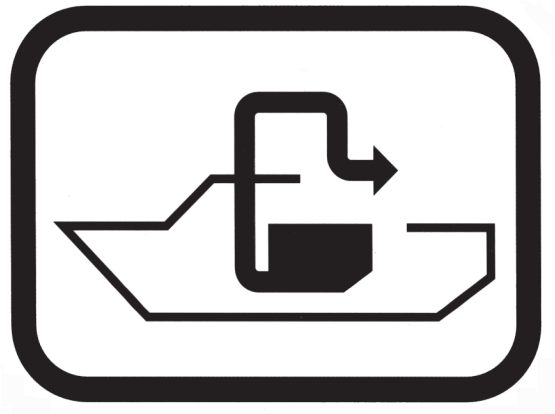

Figure 4-18. Pumpout station logo (Clean Vessel Act).

Best Management Practices

♦ *Install pumpout facilities and dump stations. Use a system compatible with the marina's needs.*

Three types of onshore sewage collection systems to handle sewage from boat holding tanks and portable toilets are available—fixed point systems, portable/mobile systems, and dedicated slipside systems (Figure 4-19).

- Fixed-point systems.

Fixed-point collection systems include one or more centrally located sewage pumpout stations. The stations are usually located at the end of a pier, often on a fueling dock, so that fueling and pumpout operations can be done at the same time. A boat that needs pumpout service moves to the pumpout station; a flexible hose is connected to the wastewater fitting in the hull of the boat; and pumps or a vacuum system move the wastewater to an onshore holding tank, a public sewer system,a private treatment facility, or another approved disposal facility.

- Dump stations for portable toilets.

Where boats in a marina use only small portable (removable) toilets, a satisfactory disposal facility is a dump station, which is fundable with a CVA grant.

- Portable systems.

Portable/mobile systems are similar to fixed-point systems and in some situations can be used in

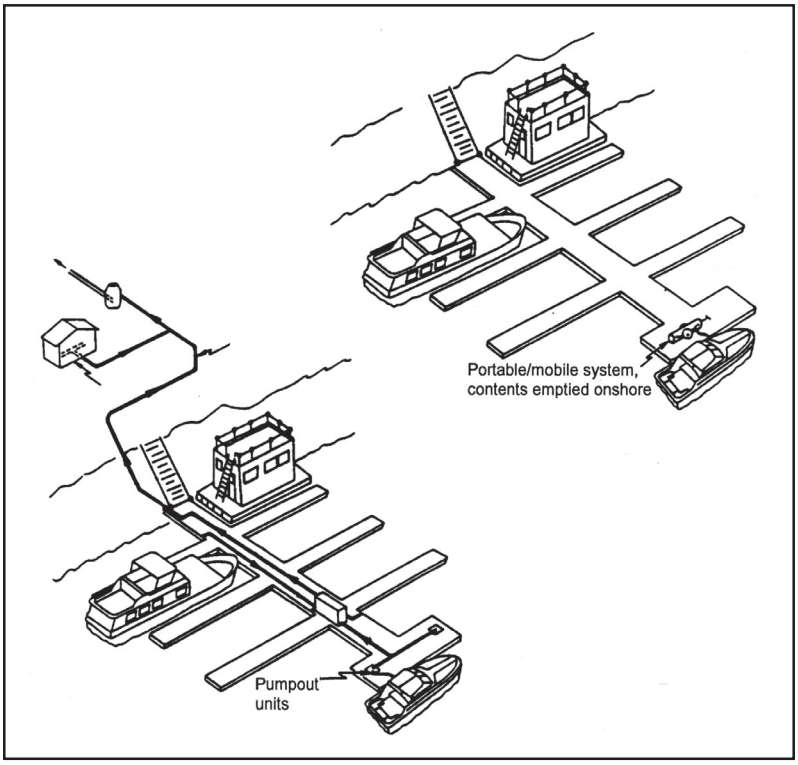

Figure 4-19. Examples of Pumpout systems

their place at a fueling dock. A portable unit includes a pump and a small storage tank. The unit is moved to a boat where the boat is docked. The unit is connected to the deck fitting on the vessel, and wastewater is pumped from the vessel's holding tank to the pumping unit's storage tank. When the storage tank is full, the portable unit is taken to a location where its contents can be discharged into a municipal sewage system or a holding tank for removal by a septic tank pumpout service.

Some marinas use a smaller mobile pumpout unit that does not have a holding tank attached but instead pumps directly from the boat, through a pump hose, and into a hose fitting in each slip that is connected to a below-dock, gravity-drained sewer pipe system.

Because boaters do not have to move their boats to a special location to use the systems and marinas do not have to install extensive dockside piping and pumping systems to provide pumpout service, portable pumpout facilities might be the most feasible, convenient, accessible, regularly used, and affordable way to ensure proper disposal of boat sewage.

Mobile systems have to be moved about a marina, and this factor should be considered when determining the correct type of system for a marina. One type of portable/mobile type of pumpout unit that is popular in the Great Salt Pond in Block Island, Rhode Island, is the radio-dispatched pumpout boat. The pumpout boat goes to a vessel in response to a radio-transmitted request, pumps the holding tank, and then moves on to the next vessel requesting a pumpout. This approach eliminates the inconvenience of lines, docking, and maneuvering vessels in high-traffic areas. Pumpout boats and mobile systems are also fundable with a CVA grant.

- Dedicated slipside systems.

Dedicated slipside systems provide continuous wastewater collection at select slips in a marina. Slipside pumpouts are particularly suited to liveaboard vessels, and dedicated slipside pumpout points can be provided to slips designated for liveaboards while the remainder of the marina is served by a fixed-point or mobile pumpout system.

In a dedicated system, direct connections are made between the boat and a below-dock gravity-drained sewer pipe system (Figure 4-20). This requires use of a vacuum-type pumpout system, which evacuates the entire line and the boat holding tank. The landside vacuum pumpout, which has its own holding tank, can discharge directly into a large inground holding tank or to a municipal sewer system.

♦ *Provide pumpout service at convenient times and at a reasonable cost.*

Use of pumpout stations increases if they are made available at times of day when customers want to use them. Pumpout availability during

Figure 4-20. Pumpout system at Hall of Fame Marina (Florida). Accommodating dozens of yachts more than 100 feet LOA, the marina's pumpout system includes below-dock sewer pipes and connectors of each slip (USEPA, 1996: *Clean Marinas—Clear Value).*

regular marina hours or when the fuel dock is also open (if the pumpout station is located next to the fuel station) has been found to work well. Pumpout stations should be available to all boats that are able to access them and cannot be restricted to marina members. Fees of up to $5 are federally allowed under the CVA grant program, and high fees often decrease pumpout use.

♦ *Keep pumpout stations clean and easily accessible, and consider having marina staff do pumpouts*.

Free pumpouts are certainly an attraction for customers, but cleanliness and ease of use are popular features as well. Customers are more likely to use pumpouts if they are kept clean and neat and directions for their use are clearly posted. Having a marina employee do pumpouts for patrons is a real service that patrons appreciate, especially if the staff person is skilled in use of the pumpout and is knowledgeable of the rules pertaining to marine sanitation devices (Figure 4-21). The ability of a pumpout station to attract new customers is magnified when pumpouts are free and done by marina staff.

♦ *Provide portable toilet dump stations near small slips and launch ramps.*

The vast majority of boats used in the United States are less than 26 feet in length, and more than half are less than 18 feet in length. Of those boats that have toilets onboard, most use portable units designed to be carried ashore for dumping into toilets. Boaters on these boats can be encouraged to dispose of their waste properly by providing portable toilet dump stations. The stations can be placed on docks or land where they are convenient to use and can be kept clean. Marinas should consider making at least one dump station available, even if the marina caters primarily to large boats. Public launch ramps should offer dump stations where feasible.

Figure 4-21. Management at Battery Park Marina (Ohio) found that most customers are willing to pump fuel but not their sewage. Dock staff at the marina, therefore, pump out the boats. Customers also often prefer to make a single stop for both fuel and a pumpout, and marinas that have made it convenient for boaters to do this (such as Battery Park Marina and Kean's Detroit Yacht Harbor in Michigan) have found that the arrange-ment leads to an increase in the volume of fuel sales as well as customer satisfaction (USEPA, 1996: *Clean Marinas—Clear Value).*

♦ *Provide restrooms at all marinas and boat ramps.*

Clean, dry, brightly lit restrooms in marinas are generally used in preference to boat toilets, especially if easy to access. Restrooms are the best way to reduce boat toilet use and thus decrease the potential for overboard discharge of untreated sewage. Where feasible, restrooms should be provided for those who use boat launch ramps. Restrooms are also an amenity that can increase user satisfaction.

♦ *Consider declaring marina waters to be a "no discharge" area.*

Federal law prohibits discharge of any untreated sewage into all territorial waters, including coastal waters to the 3-mile territorial limit, and inland waters of the Nation, but does allow use of Coast Guard-approved MSDs (Types I and II). A private marina that is not in a federal or state-designated no discharge zone may prohibit sewage discharges within the marina basin, if desired, with the addition of a clause to the slip rental contract stating that sewage discharge is not permitted (Figure 4-22). An attorney can add the appropriate language. Marina-specific no discharge policies will work if conditions are similar to those necessary to make federal or state-designated NDZs effective:

- Provision of adequate restroom facilities for marina patrons.
- Convenient and low-cost or free pumpout service at the marina.
- Adequate boater education.
- Signs that declare the marina's policy of no discharge.

This is **NO DISCHARGE** marina.
Please use our clean restrooms.
Pumpout service is free to customers.
Please do your part to keep our water clean.

Figure 4-22. An example of a sign declaring a "no discharge" marina.

- Contract language that is legally sufficient and easy to understand.
- Visible enforcement.

♦ *Establish practices and post signs to control pet waste problems.*

Many boats have dogs aboard, and the animals need an area to relieve themselves. The best way to control pet sewage is to provide a special area away from the shore for dogs to be taken and ask owners to clean up after their pets (Figure 4-23). A grassy area that is away from where people walk or children play is ideal.

♦ *Avoid feeding wild birds in the marina.*

The popular practice of feeding wild ducks, geese, swans, and seagulls around the docks attracts more birds and encourages all of them to become long-term residents at the marina. Such residential flocks can contaminate water, foul docks, and create a mess on boats. The best way to reduce this water pollution source is to prohibit people from feeding the birds.

The largest marina in the world, Marina Del Rey (California), is owned and operated by the County of Los Angeles. The county was forced to close one of its popular family bathing beaches for more than a year because of high fecal contamination in the water. Extensive tests proved that the source of the pollution problem was seagulls that spent the night on the beach, not boat sewage. Within days of stringing monofilament lines over the beach to discourage bird visits, water quality improved dramatically and the beach was eventually reopened.

♦ *Establish no discharge zones to prevent any boat sewage from entering boating waters.*

Every state has some no discharge boating waters that prohibit release of any treated or untreated sewage from all boats and vessels. No discharge zones (NDZs) are established specifically to control discharges of sewage from boats. Establishing an NDZ does not imply that other discharges, such as those from municipal sewage treatment facilities, industrial facilities, combined sewage outfalls, septic tanks, and nonpoint source runoff do not enter the waterbody. These sources

Figure 4-23. Elliott Bay Marina (Washington) solved the problem of dog droppings on its docks by providing free disposable plastic bags for owners to use to clean up after their pets. This inexpensive solution freed staff from having to clean the grounds of dog droppings periodically and virtually eliminated complaints from other boaters (USEPA, 1996: *Clean Marinas—Clear Value).*

are addressed by other permitting and regulatory programs.

EPA regulations define two types of NDZs—those that are NDZs by nature of their geography and those that can be designated by EPA and states. Waterbodies of the first type include freshwater lakes and reservoirs, and other freshwater impoundments whose entrance and exit points do not support traffic by the regulated vessels, i.e., by vessels with installed toilets. Rivers that do not support interstate vessel traffic are also NDZs by this rule. Waterbodies of the second type (that can be designated as NDZs by EPA or states) include coastal waters and estuaries, the Great Lakes and their interconnected waterways, and other flowing interstate waters that are navigable by vessels with installed toilets. Since 1975, when EPA approved the first state application for a no discharge zone, many states have established NDZs. Some states, including Michigan, Missouri, New Mexico, and Rhode Island, have designated all their waters as no discharge zones (Table 4-4). Most of Lake Michigan and Lake Superior have been declared to be NDZs.

A no discharge designation is particularly applicable to inland lakes and reservoirs where flushing may be limited, primary contact recreational activities (e.g., swimming, windsurfing) are popular, and surrounding homes might use on-site septic systems for sewage treatment. The CVA provides grants to coastal and inland states for pumpout stations and waste reception facilities to dispose of recreational boater sewage. A listing of existing no discharge zones is presented at the end of this management measure discussion.

For a no discharge designation to be successful, three key elements are necessary:

- Pumpout services in the area declared to be an NDZ should be reasonably available when customers need them and adequate for the number of boaters in the area.
- Boaters should be educated about the purpose and importance of the NDZ designation, how to properly comply with the designation, and the locations of pumpout services.
- The NDZ designation should be strictly enforced to ensure compliance. Enforcement can include boat inspection to make sure that through-hull valves from boat toilets or holding tanks are sealed shut and that Y-valves direct toilet waste into holding tanks.

♦ *Establish practices and post signs to control pet waste problems.Establish equipment requirement policies that prohibit the use of Y-valves on boats on inland waters.*

The U.S. Coast Guard has established equipment requirements for vessels with onboard toilets. Federal law prohibits the discharge of any untreated sewage from boats within the continental waters of the nation, including all rivers and lakes as well as coastal waters out to 3 nautical miles into the ocean. These requirements typically state that vessels must be configured so that the direct discharge of sewage, treated or untreated, to a waterbody is not possible. Only those relatively

Table 4-4. EPA-designated no-discharge zones in the United States (as of 2001).

States with all (or nearly all) waters designated as NDZs:

Michigan, Missouri, New Hampshire, New Mexico, Rhode Island, and Wisconsin

States with segments of their waters designated as NDZs:

California, Florida, Georgia, Massachusetts, Minnesota, New Jersey, Nevada, New York, South Carolina, Texas, and Vermont

Source: http://www.epa.gov/owow/oceans/vessel_sewage/vsdnozone.html

few boats that do travel out beyond the 3-mile limit may use a Y-valve to discharge overboard. The reality, however, is that many boats that never enter the ocean have Y-valves, seacocks, and thru-hulls installed. Most of these are boats built before there were sufficient numbers of pumpouts available. Y-valves (also called "cheater valves") have no purpose other than to bypass the holding tank to avoid using a pumpout. Doing this is clearly illegal and bad for water quality.

As with no-discharge policies, for laws that require specific equipment or configurations on boats to work, sufficient and suitable facilities for disposing of any waste (pumpout services or dump stations) should be available.

Another essential factor that promotes boater compliance is enforcement of regulations. On Lake Winnepeasaukee (New Hampshire), every boat is inspected for having a holding tank and no Y-valve or thru-hull discharge fitting. When a thru-hull fitting is discovered, it must be plugged solid before the boat may be used on the lake. This enforcement has been done successfully for over 30 years by state inspectors at all public launch ramps and by staff in private marinas around the lake.

BMP Summary Table 11 summarizes the BMPs for Sewage Facility Management mentioned in this guidance.

Dramatic improvement in water quality have been recorded where pumpouts have been installed and their use enforced. Water testing in Avalon Harbor (California) and Block Island (Rhode Island) following implementation of no discharge designations revealed significant decreases in fecal coliform bacteria concentrations during the boating season. In Rhode Island, the decrease permitted the opening of a major shellfish bed on Block Island after 13 years of summer closure.

BMP Summary Table 11. SEWAGE FACILITY MANAGEMENT

MANAGEMENT MEASURE: Install pumpout, dump station, and restroom facilities where needed at new and expanding marinas to reduce the release of sewage to surface waters. Design these facilities to allow ease of access, and post signage to promote use by the boating public.

APPLICABILITY: Marinas where adequate pumpout, dump station, and restroom facilities do not exist.

ENVIRONMENTAL CONCERNS: Boat sewage can be a problem when dumped overboard without any treatment. Although the volume of sewage discharged from boats is not as massive as a typical sewage treatment plant outfall, boat sewage is very concentrated and can add to the overall problem of fecal coliform loading to the waterbody. Boat sewage also adds extra nutrients that use dissolved oxygen and can stimulate the growth of algae, which in worst cases can grow so fast that they use oxygen needed by fish and other organisms. When untreated sewage goes overboard, it can contaminate shellfish, leading to potentially serious human health problems.

SEWAGE FACILITY MANAGEMENT PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Install pumpout facilities and dump stations. Use a system compatible with the marina's needs	Marina docks and piers; universally recommended	HIGH; matching grant money is available through Clean Vessel Act grant program for installation of pumpout facility; free pumpouts at a marina can attract new customers	HIGH; reduces the chances that untreated sewage will enter the water; results in cleaner water quality and uncontaminated shellfish	MODERATE to HIGH	LOW to MODERATE	Types of systems: fixed point system, portable/mobile system, dump station, or dedicated slipside system; EPA recommends one pumpout per 300 vessels with marine toilets
Provide pumpout service at convenient times and at a reasonable cost	Marina basin; universally recommended	MODERATE; low fees (up to $5) or free service and pumpouts done by marina staff attract customers	HIGH; providing convenient pumpouts encourages use and therefore reduces direct discharge of sewage into nearshore waters	MODERATE to LOW	LOW to MODERATE	Pumpouts should be made available during normal marina hours or when the fuel dock is also open during the boating season
Keep pumpout stations clean and easily accessible, and consider having marina staff do pumpouts	Marina pumpout station; universally recommended	MODERATE to HIGH; pumpout service at a marina can attract new customers, especially when customers do not have to pump their own boats	HIGH; pumpouts reduce direct discharge of sewage into nearshore waters	MODERATE to LOW	LOW to MODERATE	Requires staff training
Provide portable toilet dump stations near small slips and launch ramps	Marina docks and ramps; generally recommended	MODERATE; makes it convenient for boaters to empty their portable toilet and reduces chances of unsightly and unsanitary spills	HIGH; providing convenient portable toilet dump stations encourages use and therefore reduces direct discharge of sewage into nearshore waters	LOW to MODERATE	LOW to MODERATE	One dump station may be all that a drystack or small boat marina needs; use signs to indicate proper dump station use; portable toilets should never be dumped overboard
Provide restrooms at all marinas and boat ramps	Marina dockside; universally recommended	HIGH; clean bathrooms attract customers; marina surveys show that a good restroom is a major reason why boaters select a marina	HIGH; good restrooms get used and reduce boat toilet use, and hence overboard discharge	MODERATE to HIGH	LOW to MODERATE	Clean, dry, convenient restrooms; bright lights and pleasant odor are important

BMP Summary Table 11. (cont.) SEWAGE FACILITY MANAGEMENT

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Consider declaring marina waters to be a "no discharge" area	Marina-wide; generally recommended	MODERATE to HIGH; such a policy can attract environmentally conscious customers; reduces sewage discharges; increases use of pumpout; good for public relations	HIGH; reduced risk of bacterial water pollution	LOW	NONE	Legally binding slip rental contracts with customers and transient visitors might be required; works best when restrooms are available, pumpouts are available, boaters are educated, signs are posted, and policy is enforced
Establish practices and post signs to control pet waste problems	Dock and upland areas; recommended	MODERATE to HIGH; a marina free of pet waste is more attractive to present and potential customers and will reduce complaints from boat owners	MODERATE; keeps pet waste with harmful bacteria from washing into marina basin	LOW	LOW	The best way to control pet waste is to create a dog walking area away from the shore
Avoid feeding wild birds in the marina	Marina wide; universally recommended	MODERATE to HIGH; keeps marina more free of waste and reduces complaints from boat owners; cleaner docks and boats	MODERATE; reduces harmful in marina basin and on docks and boats	LOW	NONE	The best way to control bird waste is to avoid attracting birds to the marina as a feeding ground
Establish no discharge zones to prevent any boat sewage from entering boating waters	Any boating waters; generally recommended	MODERATE to HIGH; increases pumpout use; creates perception, real or not, that water quality is good	HIGH; significant improvements in water quality have been shown in enforced no discharge zones; areas closed to shellfishing and swimming can be opened	MODERATE to HIGH	MODERATE to HIGH for enforcement and education	EPA and states are responsible for establising NDZs; marina managers can request that the state establish an NDZ
Establish equipment requirement policies that prohibit use of Y-valves on boats on inland waters	Inland boating waters; universally recommended for inland waters	HIGH; the simplest and most effective enforcement tool; allowing this equipment to remain on the boat encourages cheating	HIGH; decreases sewage loading to the waterbody and can help to improve overall water quality in inland lakes and reservoirs	MODERATE to HIGH	MODERATE to HIGH for enforcement and education	This is required on some waters under federal law

4.12. Maintenance of Sewage Facilities

Management Measure for Maintenance of Sewage Facilities:

Ensure that sewage pumpout facilities are maintained in operational condition and encourage their use.

Management Measure Description

Boaters are becoming increasingly aware of the need to protect the environment and of their role in maintaining healthy waters. Boaters today want to do what is proper for the environment, and maintaining sewage facilities in good operating condition at all times so that they are always accessible to boaters helps boaters achieve their environmental goals. This measure is important because it is the simplest and most effective way to prevent the failure of sewage facilities and to ensure their availability to boaters.

Sewage collection facilities, including sewage pumpout stations and portable toilet dump stations, help reduce the release of untreated sewage into marina and surface waters. Boaters can use the facilities, however, only when the facilities are operating properly. Nonfunctioning sewage collection and disposal facilities present a serious obstacle to boaters whose holding tanks are full, and in such circumstances boaters are left with few choices for sewage disposal—travel elsewhere to find an operable pumpout or dump station, discharge sewage directly overboard, or cease using their boat toilets. The first of these options is very inconvenient; the second is illegal in no discharge zones and legal otherwise only through an approved marine sanitation device in appropriate waters; and the third would mean "stop using the boat" to many boaters. Also, an inoperable pumpout or dump station at one marina can create an excessive demand at stations in the same area that are operable. Long lines at the pumpouts can result, and these can be discouraging and tempt people to discharge illegally. Finally, if pumpouts are free to those with slips at a marina and the pumpout at that marina is inoperable, patrons will not likely be pleased with having to pay for a pumpout elsewhere.

Applicability

This management measure is applicable to marinas with sewage disposal facilities.

Best Management Practices

- *Regularly inspect and maintain sewage facilities.*

Sewage disposal facilities can be kept operating properly with regular inspection and maintenance. Routine maintenance, performed according to instructions that come with the unit, can be done by marina staff, with major problems referred to qualified service personnel. Routine inspections of marina waste holding tanks and secondary containment areas will ensure their integrity. If septic tanks and leach fields are used for final disposal, the tanks will function most efficiently and at least cost if they are pumped out regularly to prevent overflows and clogging.

Boatyards and marina facilities capable of servicing and repairing boat toilet and holding tank systems can promote annual marine sanitation device inspections and maintenance by offering this service to boat owners. During the off season or winter storage months, this service can generate additional income for a marina. It is also one way that marinas can play a proactive role in boater education and the promotion of environmental awareness.

- *Disinfect the suction connection of a pumpout station (stationary or portable) by dipping it into or spraying it with disinfectant.*

Although not a practice to protect water quality, part of pumpout station maintenance is protecting pumpout operators, whether marina staff or boaters, against infection and illness. Risk of contact with bacteria or viruses while handling the pumpout nozzle can be minimized by providing a pail that contains water and a nontoxic disinfectant, such as common bleach, next to the pumpout station. The nozzle end can be dipped into the pail immediately following each use. Care should be taken to ensure that the disinfectant solution does not spill into marina waters. The mildest, least harmful disinfectant that will do the job is the best choice for this purpose. Use of the disinfectant solution can be added to instructions provided on how to use the pumpout.

♦ *Maintain convenient, clean, dry, and pleasant restroom facilities in the marina.*

An effective way to encourage boaters to dispose of their sewage properly and not to discharge it overboard is to have good shoreside restroom facilities available for customers and guests. Surveys have shown that a factor important to boaters when selecting a marina is the cleanliness, condition, and convenience of its restrooms. The surveys show that boaters prefer to use restrooms that are

- Clean and dry
- Close to docks and accessible at all hours
- Well maintained and brightly lit
- Free of insects
- Amply supplied with toilet paper and hand towels
- Equipped with private showers and dressing rooms
- Safe

♦ *Maintain a dedicated fund and issue a contract for pumpout and dump station repair and maintenance.*

Marinas and launch ramps can establish dedicated funds specifically to maintain pumpouts and dump stations in continuous operational condition. If a CVA grant was used to purchase and install the sewage station, the U.S. Fish and Wildlife Service requires that pumpout equipment be maintained in operational condition for boater use.

BMP Summary Table 12 summarizes the BMPs for Sewage Facility Maintenance mentioned in this guidance.

BMP Summary Table 12. MAINTENANCE OF SEWAGE FACILITIES MANAGEMENT

MANAGEMENT MEASURE: Ensure that sewage pumpout facilities are maintained in operational condition and encourage their use.

APPLICABILITY: Marinas with sewage discharge facilities.

ENVIRONMENTAL CONCERNS: When faced with nonfunctioning sewage collection and disposal facilities, boaters whose holding tanks are full have three choices: (1) go elsewhere to find an operable pumpout or dump station, which is inconvenient; (2) discharge sewage directly overboard, which is illegal in no discharge zones and legal otherwise only through an approved marine sanitation device in nearshore waters; or (3) cease using their boat toilets, which to some would mean "stop using the boat."Also, one inoperable pumpout may overload another one nearby, tempting boaters to discharge illegally, particularly if the alternative pumpout is not free or charges a higher fee.

MAINTENANCE OF SEWAGE FACILITIES PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Regularly inspect and maintain sewage facilities	Marina sewage collection facilities; universally recommended	HIGH; regular inspections help detect small maintenance needs before they become big problems and cost more to repair	MODERATE; properly operating pumpouts help reduce sewage pollution	LOW	LOW to MODERATE	Requires regular inspection; should keep records of each inspection
Disinfect the suction connection of a pumpout station (stationary or portable) by dipping it into or spraying it with disinfectant	Marina pumpout station; universally recommended	HIGH; protects pumpout operators from infection	LOW; be careful to avoid spilling disinfectant into waterbody	LOW	LOW	
Maintain convenient, clean, dry, and pleasant restroom facilities in the marina	Marina; universally recommended	HIGH; clean bathrooms attract customers; marina surveys show that a good restroom is a major reason why boaters select a marina	HIGH; good restrooms get used, reducing boat toilet use and thus overboard discharge	MODERATE to HIGH	LOW to MODERATE	Restrooms are also recommended at boat launch ramps where feasible
Maintain a dedicated fund and issue a contract for pumpout and dump station repair and maintenance	Marinas; generally recommended	HIGH; facilities funded by a CVA grant are required to be properly maintained; an annual service contract ensures regular maintenance and proper functioning	HIGH; reduces sewage discharge that can result when a pumpout is out of service	LOW	MODERATE	

4.13. Boating Cleaning

Management Measure for Boat Cleaning:

For boats that are in the water, perform cleaning operations to minimize, to the extent practicable, the release to surface waters of (a) harmful cleaners and solvents and (b) paint from in-water hull cleaning

Management Measure Description

Preventing the entry of chemicals from boat cleaners, cleaning solvents, and antifoulant paint into marina waters is the most direct way to prevent harm to the aquatic environment from these products. The management practices associated with this management measure are easily implemented. They can be practiced by boat owners and marina managers alike, and they do not interfere with the need to keep boats clean.

Marina employees and boat owners use a variety of boat cleaners, such as teak cleaners, fiberglass polishers, and detergents, and boats are usually cleaned while in the water or onshore adjacent to the water. Some of the cleaner used ultimately ends up in the water. Additionally, when boat bottoms are cleaned aggressively while boats are in the water, antifouling paint can be abraded off and deposited into marina waters and sediments. This management measure is aimed at minimizing the release of harmful ingredients in cleaners, bottom paints, and harmful residues on boat hulls to marina basin waters.

Many cleaners contain harsh chlorine, ammonia, phosphates, and other caustic chemicals that harm fish and other aquatic life. If a product's label warns about potential harm to people's skin or eyes, the product is most likely harmful to aquatic life. Some chemicals in these cleaners bioaccumulate in aquatic organisms (that is, they become more concentrated as they are ingested successively by animals higher on the food chain) and could eventually bioaccumulate in fish or shellfish that are be eaten by people, posing a health risk.

Under the Clean Water Act, the NPDES Storm Water Permit Program defines boat wash water as "processed water." Discharge of any processed water by a marina or boatyard is illegal nationwide without a formal permit from EPA or a state government. This permit requirement does not apply to boat owners who are cleaning their own boats, but it does apply to anyone who professionally cleans boats in a marina.

If work is done sensibly, chemicals and debris from washing boat topsides, decks, and wetted hull surfaces while boats are in the water can be kept out of the water.

Cleaning boats that are transported from one waterbody to another is important to preventing the spread of exotic species, and it is a highly recommended practice.

Applicability

This management measure primarily concerns the actions of boat owners, and the BMPs are to be implemented primarily by individual boat owners. The information contained here is provided to educate marina managers about the importance of these measures in maintaining a clean marina, and marina managers are encouraged to incorporate the BMPs mentioned here into education programs and staff activities.

Best Management Practices

- *Wash boat hulls above the waterline by hand. Where feasible, remove boats from the water and clean them where debris can be captured and properly disposed of.*

Washing the boat hull by hand (that is, *not* by pressure washing) reduces the amount of abrasion to the hull, which results in less paint chipped off and less debris lost to the marina basin. Where feasible, remove boats from the water and clean them where debris can be captured and properly disposed of.

- *Attempt to wash boats frequently enough that the use of cleansers will not be necessary.*

Frequent washings with water alone can prevent a boat from reaching a point at which abrasive or caustic cleansers are necessary to adequately clean the hull or topsides. This practice will help prevent the possibility of spilling chemicals into the water.

- *If using cleansers, buy and use ones that will have minimal impact on the aquatic environment.*

"Nontoxic" and "phosphate-free" cleaners are available and friendlier to the environment than products with toxic components. Products that carry safety warnings about the harm they can cause to people (Figure 4-24) can harm the environment as well.

Although "biodegradable" sounds good, it does not mean that a product is nontoxic. Biodegradable products are those which can be broken down by bacteria, other organisms, or natural processes. The degradation of "biodegradable" products in water uses dissolved oxygen, and therefore these products can lower dissolved oxygen levels. Also, some products might not biodegrade in aquatic environments—freshwater or marine.

- *Switch to long-lasting and low-toxicity or nontoxic antifouling paints.*

Considerable progress has been made in antifouling paint technology in recent years, and more improvements are expected that will reduce and effectively eliminate the toxicity of hull paints and increase their ability to keep hulls free of fouling growth for longer periods. Silicone-based and hard-surfaced, nonablative copper metal-based paints are such recent innovations. In general, harder paints last longer, and some reduce the need to repaint boat bottoms to once every 10 years. More information on antifoulant paints and specifications is available on the Internet (search on "antifoulants") or can be provided by a marine paint supplier.

- *Avoid in-the-water hull scraping or any abrasive process done underwater that could remove paint from the boat hull.*

Any hull cleaning performed in the water will remove the least amount of paint if done with something soft. Mechanical underwater scrubbing machines can scrape and chip off antifouling paint and encourage fouling growth on the hull.

Frequent hand washing of hulls should not cause any paint to abrade or chip off but can adequately remove scum and fouling organisms.

In-the-water hull cleaning performed by divers should also be done in a manner that does not remove paint from the hull.

- *Ensure that adequate precautions have been taken to minimize the spread of exotic and invasive species when boats are transferred from one waterbody to another.*

Boat owners should be aware of the importance of thoroughly cleaning boats taken from waters known to be inhabited by exotic or invasive species. Some species can be introduced to new waterbodies this way. Generally, the spread of exotic and invasive species can be controlled by washing a boat in hot water and letting it thoroughly dry for a minimum of 5 days before putting the boat into a different waterbody. The recom-

WARNING: EYE IRRITANT. Avoid contact with eyes. May cause skin irritation. For sensitive skin or prolonged use wear gloves. Use with adequate ventilation. FIRST AID: EYES—-rinse eyes with water for 15 minutes, call a physician. SKIN—rinse with water. IF SWALLOWED—-drink a glassful of water. Call a physician. KEEP OUT OF REACH OF CHILDREN.

Figure 4-24. Warning sign that indicates toxicity to both people and the environment.

Associated Marine Technologies (Florida) installed a closed-loop pressure washing system for boat bottoms.

- Green Cove Marina (New Jersey) designed its own sump drain system and lift pump under the boat lift. The system pushes dirty water into a filter and recycling system consisting of three 55-gallon filtering drums and a 225-gallon holding tank. The debris is dried and sent to a landfill.
- Harbour Towne Marina (Florida) installed a wastewater filtration system to clean the power wash water to meet the county's gray water standards for discharge into the municipal sewer system. A concrete washing pad slopes down to a central drain, where the washwater is filtered and treated with three different chemicals. The marina hauled and washed 650 boats in the 1994–1995 season.
- Summerfield Boat Works (Florida) installed a water filtration system that includes an ultraviolet light ozone generator to oxidize all dissolved pollutants and erase odor. The wastewater is then recycled within the marina. The boatyard pays for its wastewater treatment program by charging an Environmental Cost Obligation for each boat hauled for pressure washing.

(USEPA, 1996: *Clean Marina—Clear Value*)

mendations for specific species vary, and information should be provided to boaters about any exotic or invasive species known to occur in waterbodies connected to a marina's waters, or where patrons from a marina are known to visit.

♦ *Minimize the impacts of wastewater from pressure washing.*

There are several ways to treat the wastewater from pressure washing to remove the paint chips or particles that might be present:

- *Settling*: Trap the water in a container and allow it to sit long enough after washing to permit any particles to settle out of the water. This method will remove only the particles large enough to settle out of solution.
- *Filtration*: Wastewater can be passed through one or more filters that screen out particles. A filter cloth used at the wash site can be effective for straining out visible particles. Additional filtration is achieved by using a series of filters with smaller and smaller mesh sizes.
- *Treatment*: Chemical or biological cleaning technologies can be used to treat the wastewater and remove contaminants. Treatment can remove oil and grease, metals, or other contaminants. Once wastewater has been treated, it can be discharged into marina waters or a sanitary sewer (check local regulations) or can be reused at the marina for more boat washing or grounds watering.

Effluent from pressure washing usually requires a storm water discharge permit, issued by the state or locality. Closed loop or zero discharge pressure wash systems usually do not require a permit. Check with the appropriate environmental authority before discharging any effluent to a sewer system.

BMP Summary Table 13 summarizes the BMPs for Boat Cleaning mentioned in this guidance.

BMP Summary Table 13. BOAT CLEANING MANAGEMENT

MANAGEMENT MEASURE: For boats that are in the water, perform cleaning operations to minimize, to the extent practicable, the release to surface waters of (a) harmful cleaners and solvents and (b) paint from in-water hull cleaning.

APPLICABILITY: Boat owners. Marina managers should be aware of the issues presented and inform boaters to the extent feasible.

ENVIRONMENTAL CONCERNS: Many boat cleaners contain harsh chlorine, ammonia, phosphates, and other chemicals that can harm fish and other aquatic life. Some chemicals in these cleaners become more concentrated in aquatic organisms as they are ingested by other animals and can eventually find their way into fish and shellfish, which might be eaten by people. Chemicals and debris from washing boat topsides, decks, and hull surfaces can be kept out of the water by using some common sense boating practices.

BOAT CLEANING PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Wash boat hulls above the waterline by hand. Where feasible, remove boats from the water and clean them where debris can be captured and properly disposed of	Boats in marina basin; generally recommended	MODERATE; handwashing is less abrasive than other methods; works well if done frequently	MODERATE; washing by hand reduces abrasion, which chips antifouling paint into the water	LOW	LOW	
Attempt to wash boats frequently enough that the use of cleansers will not be necessary	Boats in marina basin; generally recommended	MODERATE; eliminates use of cleansers	MODERATE	LOW	LOW	Frequent handwashing with water and a cloth is recommended
If using cleansers, buy and use one that will have minimal impact on the aquatic environment	Boats in marina basin; generally recommended	MODERATE to HIGH; these products work well and are often less hazardous to humans	HIGH; reduces chance that harmful chemicals will enter aquatic/marine environment	LOW	LOW	Marina managers can encourage use of environmentally friendly products by stocking them in the marina store
Switch to long-lasting and low-toxicity or nontoxic antifouling paints	Marina store, work area, and boat; generally recommended	HIGH for boater; harder paints last longer and can last several seasons before needing repainting	MODERATE to HIGH; new antifouling paints are effective and less toxic or nontoxic to aquatic animals	LOW to MODERATE	LOW to MODERATE	Use of antifouling paint on boats kept in fresh water is discouraged except, for example, where zebra mussels are a problem
Avoid in-the-water hull scraping or any abrasive process done underwater that could remove paint from the boat hull	Boats in marina basin; generally recommended	LOW to MODERATE; depends on number of boaters who work on boat hulls in slips	MODERATE; can reduce greatly the amount of paint lost to the water	LOW	LOW	
Ensure that adequate precautions have been taken to minimize the spread of exotic and invasive species when boats are transferred from one waterbody to another	Boats in marina basin; generally recommended	MODERATE to HIGH; exotic species infestations can be very expensive to combat	MODERATE to HIGH; exotic and invasive species can harm native species and change ecosystem dynamics	LOW	LOW	Much less expensive to prevent infestations than to control established exotic and invasive species
Minimize the impacts of wastewater from pressure washing	Marina work area; generally recommended	MODERATE; removing larger particles from wastewater can reduce treatment needs	MODERATE; reduces potential for release of debris to surface waters	MODERATE	LOW	Wash water from hull washing is processed water and cannot be discharged directly to U.S. waters; check local regulations

4.14. Boat Operation

Management Measure for Boat Operation:

Manage boating activities where necessary to decrease turbidity and physical destruction of shallow water habitat.

Management Measure Description

No wake zones, motorized craft restrictions, and sign and buoy placement are widely used practices for protecting shallow-water habitats. Important aquatic vegetation should be protected from damage due to boat and personal watercraft propellers because of its ecological importance and value in preventing shoreline erosion. This management measure presents effective, easily implemented practices for protecting aquatic vegetation and shorelines.

Boat traffic (including personal watercraft) through shallow-water areas and in nearshore areas at wake-producing speeds can resuspend bottom sediment, uproot submerged aquatic vegetation, erode shorelines, and harm some animals, including manatees. Resuspended sediment and erosion along shorelines increases turbidity in the water column. Turbid waters can't support submerged aquatic vegetation to the same depths as clear waters because sunlight can't penetrate to as great a depth. With photosynthesis limited to the upper foot or so of water, less dissolved oxygen is produced.

Fish that locate prey primarily by sight have a harder time finding prey in turbid waters. Plant leaves can become coated with fine sediment, and bottom-dwelling organisms are continually covered by resettling sediment.

Resuspended sediment can also contain harmful chemicals that were discharged at the marina or elsewhere in the watershed and had been trapped in the sediment. Once in the water column, these chemicals are more likely to be ingested by fish and shellfish and to work their way up the food chain, possibly to someone's dinner table.

Uprooted submerged aquatic vegetation can no longer provide habitat for fish and shellfish or food for waterfowl. Instead of recycling nutrients released from matter decomposing in the waterbody, the vegetation adds more nutrients as it decomposes. It also cannot reduce wave energy at shorelines, so the shorelines become more exposed to the erosive forces of storm waves and the boat wakes that contributed to their initial loss. Replacing submerged aquatic vegetation once it has been uprooted or eliminated from an area is difficult, and the science of replacing it once it is lost is not well developed.

Many manatee mortalities are human-related, occurring from collisions with watercraft, and restrictions on boating activity in shallow water habitats favored by the animals could reduce the number of animals injured by propellers. West Indian manatees (*Trichechus manatus*) are found in shallow, slow-moving rivers, estuaries, saltwater bays, canals, and coastal areas. They are a migratory species, and in the United States they are concentrated in Florida in the winter but can be found in summer months as far west as Alabama and as far north as Virginia and the Carolinas. There are about 2,600 West Indian manatees left in the United States.

Manatees are protected under federal law by the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973, which make it illegal to harass, hunt, capture, or kill any marine mammal. They are also protected by the Florida Manatee Sanctuary Act of 1978, which states:

Guidelines for Responsible Personal Watercraft Operation

Personal watercraft, include jet skis and waterbikes, are propelled by waterjet drives, have shallow draft designs, and are able to achieve planing speeds (65 mph and higher). Approximately one-third of all new boat sales in recent years have been personal watercraft. They are defined as Class A inboard boats by the U.S. Coast Guard and are required to follow most boating regulations. The personal watercraft industry encourages users of personal watercraft to adopt the following simple guidelines to preserve natural resources:

- Ride in main channels to avoid stirring bottom sediments; limit riding in shallow water.
- In coastal areas, be aware of low tide when seagrass beds, other delicate vegetation, and bottom organisms are more exposed.
- Operate away from shore as much as possible to avoid disturbing wildlife with wakes and noise and to avoid interfering with their feeding, nesting, and resting.
- Ride at controlled speeds in waters where sea otters, sea lions, manatees, whales, and sea turtles live and swim, so you can avoid hitting and injuring them.
- Avoid mangrove communities, kelp forests, seagrass beds, and coral reefs, since these are delicate ecosystems that are easily damaged.
- Avoid high speeds near the shore to minimize or eliminate your contribution to shoreline erosion.
- Wash your personal watercraft off after use and before trailering it to other waters to avoid spreading exotic, nonnative species to uninfected waters.

(PWIA, 1999)

"It is unlawful for any person, at any time, intentionally or negligently, to annoy, molest, harass, or disturb any manatee." Anyone convicted of violating Florida's state law faces a possible maximum fine of $1,000 and/or imprisonment for up to 60 days. Conviction on the federal level is punishable by a fine of up to $50,000 and/or 1 year in prison.

The manatee is mentioned to illustrate the harm that can be done to aquatic life by boats. Species other than manatees, such as seals or dolphins, might be more likely to be affected by boat operation in other regions of the country. The state natural resources agency can be contacted for state- or region-specific information.

Applicability

This management measure is applicable to state natural resource managers. Marina managers and boaters can become involved in efforts to protect sensitive aquatic habitats.

Best Management Practices

♦ *Restrict boater traffic in shallow-water areas.*

Where shallow areas that normally have submerged aquatic vegetation are found instead to have trenches (usually 10 to 24 inches wide) without vegetation running through them, boat propellers or personal watercraft are probably the reason. Seagrass beds usually grow in patches; the center of the patch is protected from erosive currents by vegetation at the edge of the patch. Trenches cut by boat propellers act like roads cut through a forest, exposing the center of the patch to currents and making the entire patch less stable. The sediment in the trench is also newly exposed to currents, making it difficult for new vegetation to establish itself. Further loss of submerged aquatic vegetation and sediment next to the trenches is likely after the initial loss.

To protect seagrass beds and bottom habitats, shallow-water areas can be established as "off limits" to boat traffic of any type, including personal watercraft. Signs or buoys in the water around the edges of these areas can help the public comply with shallow habitat protection efforts. Distribution of flyers with maps that show shallow areas and indicate permanent landmarks, so boaters can easily determine whether they are near shallow areas, is another effective tool. Boaters usually try to protect these habitats once they understand their ecological importance and are aware of their presence. Shallow-water habitat destruction is due more to a lack of knowledge than to negligence.

- ♦ *Establish and enforce no wake zones to decrease turbidity, shore erosion, and damage in marinas.*

No wake zones are more effective than speed limits in shallow surface waters for reducing turbidity and erosion caused by boat passage. Hull shape strongly influences wake formation, allowing some boats to go fast with little wake while other boats throw a large wake at slow, nonplaning speeds. In shallow areas, larger waves from the wakes of "speed-limited" watercraft are more likely to resuspend bottom sediments and create turbid waters.

Although the prime responsibility for creating, enforcing, and posting signs for no wake zones rests with government, marinas can *(and many do!)* post NO WAKE signs within their marina waters.

BMP Summary Table 14 summarizes the BMPs for Boat Operation mentioned in this guidance.

BMP Summary Table 14. BOAT OPERATION MANAGEMENT

MANAGEMENT MEASURE: Manage boating activities where necessary to decrease turbidity and physical destruction of shallow-water habitat.

APPLICABILITY: State natural resources managers. Marina managers and boaters can become involved in efforts to protect aquatic habitats.

ENVIRONMENTAL CONCERNS: Boat and personal watercraft traffic through very shallow water and nearshore areas at wake-producing speeds can resuspend bottom sediments and erode shorelines, all of which can increase turbidity in the water column. Turbidity blocks the penetration of sunlight to underwater plants that need light for survival, and it reduces visibility for fish who rely on sight to catch their prey. Vessel traffic can also uproot submerged aquatic vegetation (SAV), which is habitat for fish and shellfish and food for waterfowl, recycles nutrients released from matter decomposing in the waterbody, and reduces wave energy at shorelines, thus protecting them from erosion. Vessel traffic also might churn up harmful chemicals that had been trapped in the sediments and might contaminate fish and shellfish that people eat. Propellers or jet drives, when in contact with the bottom, dig visible furrows across the soil and the vegetation, which can take years to recover.

BOAT OPERATION PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Restrict boater traffic in shallow-water areas	Shallow-water boating areas; generally recommended	MODERATE; vegetated bottoms help limit erosion and resuspension of sediments	HIGH; shallow water habitats are important to many aquatic organisms for feeding, shelter	MODERATE	MODERATE	Mark areas with signs and buoys; include sensitive shallow area restrictions on navigation charts; post charts on marina bulletin boards
Establish and enforce no-wake zones to decrease turbidity, shoreline erosion, and damage in marinas	Near-shore areas; universally recommended	HIGH; wake control reduces damage to docks, floats, and shorelines and saves cost of maintenance dredging; wave-free marina basins are more pleasant for boaters	HIGH; reduces shoreline erosion; preserves biologically important nearshore habitats and the flora and fauna that live in them	LOW	LOW	Consider posting "no-wake" signs near shoreline areas in the marina; solicit the local government to establish no-wake zones where shoreline erosion might be a problem

4.15. Public Education

Management Measure for Public Education:

Public education, outreach, and training programs should be instituted for boaters, as well as marina owners and operators, to prevent improper disposal of polluting material.

Management Measure Description

Public education is one of the most effective ways to reduce pollution in and around marinas and from recreational boating. A boating public that understands the causes and effects of pollution is more likely to want clean waters and healthy aquatic environments. If the public is told about the simple and effective ways that they can reduce their impacts on the environment, they are usually happy to do their part. One of the primary factors in the success of any pollution prevention program is widespread support for the program by an educated public.

Public education is a low-cost, effective, proven method to improve and reinforce environmentally conscious behavior in all segments of the public, including the boating public. The availability of a variety of public education materials on virtually all environmental issues and for all segments of the public makes this management measure easy to implement, and creating an education program with a message that is consistent from the state level through the local level to the level of the private or public marina is an excellent way to ensure that the right message is reaching as wide a public as possible.

Many states, localities, public and private agencies and organizations, and marina owners are using public education as a tool for combating pollution. This management measure supports efforts already being made and encourages others to join the educational campaign with public education programs of their own. A state might target registered boat owners, an organization might target its membership, and a marina might focus on its patrons. Numerous examples of public education materials are available from national organizations like the National Marine Manufacturers Association, the National Clean Boating Campaign organized by the Marine Environmental Education Foundation, Inc. (or MEEF) (www.cleanboating.org), the National Oceanic and Atmospheric Administration's Sea Grant program (www.nsgo.seagrant.org), and EPA's Office of Water (www.epa.gov/OW). There is no reason to reinvent the wheel! Instead, time and effort can be saved by using available materials to create a program that focuses on a particular situation.

The EPA web site offers a couple of ways to find out who is involved in environmental activities in your watershed. One is from the homepage of the Office of Wetlands, Oceans, and Watersheds (OWOW), <www.epa.gov/owow>. A listing of specific groups involved in actions for watersheds throughout the United States can be found at the Surf Your Watershed homepage, <www.epa.gov/surf>. At this page, do the following:

- Click on *Locate your watershed.*
- Click on *Search by Map.*
- Select your state from the map.
- Within the state map, click on the watershed you're interested in.

The subsequent web page will tell you the name of the watershed you've chosen and the U.S. Geological Survey's cataloging unit number for it. Near the bottom of the page will be a section titled *People* that provides links to groups involved

with watershed protection activities in that watershed.

Another way to find out who is involved in activities in your watershed from EPA's homepage (www.epa.gov) is by clicking on the *Concerned Citizens* option. One of the options at the *Concerned Citizens* page is *Acting Locally*. This option provides links to national organizations active at the local and watershed levels.

If you find that there are no groups listed as working in your watershed, try following the first three steps above, and at the *Watershed Information* page, under *Working in Your Watershed*, click on either *How can I get involved in my watershed?* or *How do I start a watershed team?* to find out how you can get yourself and others involved.

EPA publishes many documents and fact sheets on topics of interest to boaters. A list of publications related to a specific topic can be obtained from the EPA homepage (www.epa.gov). At the homepage, select *Publications* and then browse and search the National Publications Catalog using keywords such as "boat," "storm water," or "discharge" to find what you are interested in. Some of the documents are available on the Internet, or they can be ordered on-line from the *Publications* web site. Most are free of charge.

The National Sea Grant Program encourages the wise stewardship of marine resources through research, education, outreach, and technology transfer. Sea Grant is a partnership between the Nation's universities and the National Oceanic and Atmospheric Administration (NOAA). Congress passed the National Sea Grant College Program Act to create Sea Grant in 1966. Today 29 Sea Grant Colleges are focused on making the United States the world leader in marine research and the sustainable development of marine resources. Sea Grant produces and makes available a wealth of information on marine topics—from public school curriculum materials to the most advanced scientific research. Visit the Sea Grant homepage (www.nsgo.seagrant.org) to see what publications are available, where the Sea Grant programs are located, and what kinds of research and activities they are involved in.

The U.S. Coast Guard (USCG) homepage at <http://www.uscg.mil> offers a link to the USCG *Marine Safety and Environmental Protection* page. Links to other programs from the USCG can be found most easily by clicking on the link to *Services We Provide* and then choosing what is of interest on the subsequent page. For example, the Sea Partners Campaign is an environmental education and outreach program focused on communities at large to develop community awareness of maritime pollution issues and to improve compliance with marine environmental protection laws and regulations. A link to listings of publications of the USCG is also provided at this web page.

Searching through an Internet search engine, such as Infoseek or Altavista, on *clean boating* should produce a number of links to sites with information on campaigns and organizations involved with clean boating issues. A few of the pages likely to appear as a result of the search are:

- California Clean Boating Network (CCBN) homepage, <www.coastal.ca.gov/ccbn/ccbndx.html>.
- Marine Environmental Education Foundation National Clean Boating Campaign, <www.cleanboating.org>.
- California Department of Boating and Waterways, <www.dbw.ca.gov>.
- Sea Grant Extension (San Diego) Boating Pollution Prevention Section, <commserv.ucdavis.edu/CESanDiego/Seagrant/coastour.htm>.
- Save Our Shores dockwalkers, <www.saveourshores.org/dockwalkers.html>.

A portion of funding from the Clean Vessel Act can be used for educational outreach regarding the effects of boater sewage and what boaters can do to avoid improper sewage disposal. Public awareness campaigns occur annually, and marinas are encouraged to participate in the National Clean Boating Campaign (Figure 4-25). Visit the campaign's web site at <www.cleanboating.org>. Major national CVA educational products produced by the joint effort have included a poster for distribution to more than 22,000 marinas, press

Figure 4-25. National Clean Boating Campaign logo.

and training packets, and various public service announcements for radio, television, and print media. States have also held similar events and are producing their own educational products.

These efforts are also geared toward informing boaters and marina operators of sewage disposal problems, educating them about the use and advantages of pumpout and dump stations, and where it is best to locate such stations. Boaters and anglers can call 1-800-ASK-FISH, a toll-free number established by the Sportfishing Promotion Council, to find the location of pumpout and dump stations near them and to report malfunctioning facilities.

Signage is an important element in any public education campaign, both to remind the educated to practice what they know and to educate the unaware of what they can do to reduce their impact on the environment. Short, simple, positive messages should be prominently posted wherever they will be helpful.

Applicability

This management measure is applicable to all groups and entities involved in boater education. Effective education programs can be implemented by states, organizations, or marina managers.

Best Management Practices

♦ *Use signs to inform marina patrons of appropriate clean boating practices.*

Interpretive and instructional signs placed at marinas and boat-launching sites are a key method of providing information to the boating public. Boater cooperation can be substantially increased at modest expense by using signs.

In a Rhode Island best management practice demonstration project, the use of signs was ranked by boaters as the best method to inform them about best management practices in the marina. It ranked second in terms of its effectiveness for getting boaters to use best management practices. Signs can be more cost-effective than other methods of education because they need be installed only once, and once in place they are effective for a long time. Inexpensive yet effective signs can be produced by a marina employee with a little artistic talent. Common topics for marina signage include solid waste disposal, liquid waste disposal, pumpout locations and instructions, and spill response instructions. Figure 4-26 shows an example of wording on a sign in Ponaug Marina (Rhode Island).

In areas where boaters are of various ethnic and cultural backgrounds, publishing education materials in the various languages appropriate to the region is encouraged.

♦ *Establish bulletin boards for environmental messages and idea sharing.*

Bulletin boards are a form of signage, and they allow marinas to post recent or new information

> The Cap Sante Boat Yard (Washington) uses a materials exchange sheet in the harbor master's office that encourages sharing leftover varnishes, paints, and other boat maintenance products instead of discarding them. People with materials left over after a project list what they have on a sheet, and anyone who needs them can contact the person on the sheet (USEPA, 1996: *Clean Marinas— Clear Value*).

HARMFUL MATERIALS COLLECTION SITE. To ensure proper disposal, deposit harmful materials below. Liquids such as solvents, fuels, engine oils, and toxic antifreeze should be bottled and capped to prevent spillage. Keep incompatible liquids such as oil and antifreeze separate. Label all containers noting their content and origin. Oil filters and other absorbent materials should be packaged so as to prevent leakage. Thank you for helping to keep our marina and the boating envionrment clean.

Figure 4-26. Sign with instructions to patrons on proper disposal of materials.

for the benefit of their patrons. They are convenient places to post notices about the availability of dustless sanders for rent, environmentally friendly cleaners and antifouling paints, new practices and programs at the marina for reducing pollution, water quality monitoring results, how to maintain an engine to keep emission output low, or any other positive clean boating message. Marina patrons can be invited to post notices about leftover products (for example, varnish or paint) they have for sale or tips on practices they've found to be easy and effective for protecting the boating environment.

Bulletin boards are noticed more often if their contents are moved around or changed often and if the location of the bulletin board is changed occasionally as well.

- *Promote recycling and trash reduction programs.*

A New Jersey marina encouraged recycling by giving its patrons reusable tote bags with the marina's name printed on the side. The patrons used the bags to temporarily store recyclable glass, cans, and plastics from their boats for proper disposal later at a recycling collection point, and occasionally for grocery shopping. Promoting recycling is an effective way to reduce the quantity of solid and liquid waste placed in marina and surface waters.

- *Hand out pamphlets or flyers, send newsletters, and add inserts to bill mailings with information about how recreational boaters can protect the environment and have clean boating waters.*

The Washington State Parks and Recreation Commission designed a multifaceted public education program that encourages the use of marine sanitation devices and pumpout facilities, discourages impacts on shellfish areas, and provides information to boaters and marina operators about environmentally sound boat operation and maintenance. The commission prepared written materials, gave talks to boating groups, participated in events such as boat shows, and developed signs for placement at marinas and boat launches. Printed materials included maps of pumpout facility locations, booklets explaining how boats pollute, pamphlets on the dangers of plastic debris in the water, and articles on the environmental effects of improper boat operation.

Marina owners can do the same on a smaller scale. Written materials can be made available at a marina's office, its supply store, or other places frequently visited by boaters or included with bills mailed to patrons.

Fact sheets ranked second among boaters for informing them about best management practices in a University of Rhode Island demonstration project. Fact sheets had the highest effectiveness rating and ranked first in getting boaters to actually use best management practices, but boaters generally didn't pick up educational flyers where they saw them. An important lesson from this demonstration project was that boaters cannot be expected to voluntarily take the information: brochures should be placed directly into their hands. Inserting fact sheets and information in newsletters or monthly mailings or handing them out with slip lease agreements are effective ways to do this.

- *Organize and present enjoyable environmental education meetings, presentations, and demonstrations and consider integrating them into ongoing programs.*

Presentations at local marinas or other locations are a good way to discuss issues with boaters and marina owners and operators. Boater workshops can also be a useful tool for introducing new environmental practices at marinas, but this

method was ranked last among methods for informing boaters about best management practices. Conducting successful formal workshops requires a considerable investment of time and resources. One of the best methods to inform marina patrons about best management practices is a walking tour of the facility with demonstrations of products and procedures so that participants see the benefits of management practices first-hand and gain hands-on experience in using the practices. Incentives for participation like door prizes, coupons for free pumpouts, or discounts at the marina store help bolster attendance.

- *Educate and train marina staff to do their jobs in an environmentally conscious manner and to be good role models for marina patrons.*

Marina staff who are fully educated and trained on all of the environmental management practices used at a marina—from how to use a pumpout station, where the recycling bins are located, and what can and can't be recycled to how storm water is treated and where it goes—can set an excellent example for patrons. Marina staff are the first people boaters will ask about a marina's environmental practices. An informed staff presents the image of an environmentally proactive marina, whereas an uninformed staff could make patrons think a marina is not concerned about environmental matters.

- *Insert language into facility contracts that promotes tenants' using certain areas and clean boating techniques when maintaining their boats. Use a contract that ensures that tenants will comply with the marina's best management practices.*

When a marina has established procedures for keeping the grounds and waters clean, cooperation from patrons is absolutely essential. The time and money spent to establish a clean marina can be negated by patrons who either don't share an enthusiasm for clean boating or mistakenly don't think it is their responsibility to keep the grounds and water clean. Language in slip contracts or other documents, such as dustless sander rental agreements, make them take notice and realize that the marina is serious about maintaining a clean marina, and clean boating in general. Some patrons might elect to dock their boats at other marinas, but most boaters are glad to cooperate with a good cause.

- *Have a clearly written environmental best management practices agreement for outside contractors to sign as a precondition to working on any boat in the marina.*

A facility is often legally responsible for pollution problems created by negligent outside contractors. Because of this significant liability, outside contractors need to be provided with information that clearly explains the facility's pollution prevention policies and best management practices and clearly states the contractor's responsibility to operate in accord with the marina's policies.

- *Participate with an organization that promotes clean boating practices.*

Public and private organizations are available to assist in developing or providing educational materials. These materials can be tailored to suit an individual marina or yacht club or to be used as public service announcements. Some marina-oriented organizations that might be able to provide assistance with environmental education efforts are listed in Appendix E.

Public Education Practices Applicable to Specific Management Measures

Some public education strategies specifically geared toward individual management measures are suggested below.

- *Provide MARPOL placards.*

International MARPOL law requires all boats of 25 feet or more in length to have a visible sign about trash disposal regulations posted where garbage is stored. Most boat retail stores and marinas have standard MARPOL signs available for sale to customers who need to comply with this legal requirement.

- *Paint signs on storm drains.*

Painted storm drains grab people's attention at a marina and help control disposal of solid and liquid wastes in inappropriate places. Cap Sante Boat

Haven (Washington) stencils its storm drains with pictures of crabs and fish and the words "DUMP NO WASTE – DRAINS TO BAY/LAKE/RIVER."

♦ *Establish and educate marina patrons about rules governing fish cleaning.*

Marinas can issue rules regarding the cleaning of fish at the marina, depending on the type of services offered by the marina and its clientele. Marinas not equipped to handle fish wastes can prohibit fish cleaning at the marina; those that host fishing competitions or that have a large fishing clientele can establish fish cleaning areas with specific, enforceable rules for their use. Signs can be used to attract fishers to fish cleaning stations and explain the rules for their use.

♦ *Educate boaters about good fish cleaning practices.*

Some boaters need to be educated about the problems created by discarding fish waste into marina waters, proper disposal practices, the ecological advantages of cleaning fish at sea, and discarding wastes into the water where the fish were caught (if allowed). Signs posted on docks (especially if fish cleaning has typically been done there) and talks with boaters during the course of other marina operations help educate boaters about marina rules governing fish cleaning, waste disposal, and cleanup.

♦ *Provide information on local waste collection and recycling programs.*

Information on used oil recycling and collection programs for used products that are contaminated with oil or other petroleum products can be inserted in monthly newsletters or monthly bills or provided with slip leasing contracts. A clause requiring the use of fuel/air vent spill preventors and bilge absorption pads on all boats can be added to contracts.

♦ *Hold clinics on safe fueling and bilge maintenance.*

During special clinics on environmental practices or general clinics of interest to boaters, demonstrate the proper use and disposal of bilge oil pads and other petroleum control devices.

♦ *Teach boaters how to fuel boats to minimize fuel spills.*

Boaters need to understand that whenever they spill even a few drops of oil or fuel, the environment is harmed. There are simple steps boaters can take to prevent fuel loss: use an oil absorption pad to catch drops when the fueling nozzle is removed from the boat; install a fuel/air separator on the air vent line; and place an oil-absorbing pad in the bilge. Teach boaters that when they top off a fuel tank from an underground storage tank, the cool fuel expands as it heats up and will overflow through the air vent onto the water if there is not enough expansion space in the fuel tank. Spills of this type are even more dangerous when boats are placed in dry rack storage in buildings, where the fuel is a fire hazard. Antisiphoning valves can be installed on the engines of larger boats on the fuel line near the fuel tank to prevent fuel from draining if the fuel line breaks during an accident or fire.

♦ *Stock phosphate-free, nontoxic cleaners and other environmentally friendly products.*

Marinas can stock, advertise, and promote the use of phosphate-free, nontoxic cleaners and other environmentally safe products.

♦ *Place signs in the water and label charts to alert boaters about sensitive habitat areas.*

Many harbors establish and mark no wake zones near marinas or in narrow channels using floating marker buoys. Signs and buoys could also be used to designate sensitive environmental areas where boaters should exercise particular caution. As with other public education materials, these signs should be in multiple languages if appropriate to the region.

♦ *Educate boaters to thoroughly clean their boats before boating in other waterbodies.*

The spread of many exotic and invasive aquatic species can be controlled by ensuring that they are not transported from one waterbody to another on trailered boats. See section 4.3, Habitat Assessment, for further information.

BMP Summary Table 15 summarizes the BMPs for Public Education mentioned in this guidance.

BMP Summary Table 15. PUBLIC EDUCATION MANAGEMENT

MANAGEMENT MEASURE: Public education, outreach, and training programs should be instituted for boaters, as well as marina owners and operators, to prevent improper disposal of polluting material.

APPLICABILITY: All groups and entities involved in public education for boaters.

ENVIRONMENTAL CONCERNS: A boating public that understands the causes and effects of pollution is more likely to want clean waters and healthy aquatic environments, and if they are told about the simple and effective ways that they can reduce their impact on the environment, they will usually be happy to do their part. Public education is one of the most effective ways to reduce pollution in and around marinas and from recreational boating.

PUBLIC EDUCATION PRACTICES

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Use signs to inform marina patrons of appropriate clean boating practices	Marinas and launch ramps; universally recommended	HIGH; cost-effective way to promote clean boating practices; every boater who boats cleaner helps keep the marina cleaner	MODERATE to HIGH; clean boating is good environmental practice	LOW to MODERATE	NONE to LOW	Boater cooperation can be substantially increased by using signs with positive messages; signs should be in all languages appropriate to the region.
Establish bulletin boards for environmental messages and idea sharing	Marinas where customers will stop and read; universally recommended	MODERATE; promotes an environmental image for the marina; inexpensive way to inform boaters of new policies and educational events; posting a materials exchange list for sharing leftovers will save money and reduce waste	MODERATE to HIGH; reduces waste produced and potentially limits water pollution, air pollution, solid and hazardous waste quantities	LOW	NONE to LOW	Move or change the contents often to increase visibility; locate a bulletin board where boaters will see it and where they spend a little time waiting, such as in a store or reception area; use several bulletin boards if necessary to reach all customers
Promote recycling and trash reduction programs	Marinas and launch ramps; generally recommended	MODERATE; recycling is often less expensive than waste hauling, especially if provided by a municipal recycling program	MODERATE; reduces the quantity of solid and liquid waste sent to landfills; reduces new resource use	LOW to MODERATE	LOW	Consider distributing reusable tote bags labeled with your marina's name for collecting and transporting recyclables to the recycling area.
Hand out pamphlets or flyers, send newsletters, and add inserts to bill mailings with information about how recreational boaters can protect the environment and have clean boating waters	Marinas and all boaters; universally recommended	MODERATE to HIGH; handouts promote clean boating practices; gives marina a positive environmental image	MODERATE; environmental harm is reduced with every person who boats with a conscious effort to protect the environment	NONE to LOW	NONE to LOW	Fact sheets are generally the most effective method of getting a message to boaters; many organizations and agencies have fact sheets available for photocopying and redistribution, e.g., NOAA, USFWS, EPA, local boating organizations, states, and others

BMP Summary Table 15. (cont.) PUBLIC EDUCATION MANAGEMENT

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Organize and present enjoyable environmental education meetings, presentations, and demonstrations and consider integrating them into other programs	Marina; universally recommended	MODERATE to HIGH; promotes a positive environmental image; boaters that are trained in proper procedure may reduce staff time spent on environmental cleanup	MODERATE to HIGH; educated boaters keep pollutants out of the water	LOW to MODERATE	LOW to MODERATE	Consider a walking tour of the facility with demonstrations of products and procedures; see National Clean Boating Campaign web site for examples: <www.cleanboating.org>
Educate and train marina staff to do their jobs in an environmentally conscious manner and to be good role models for marina patrons	Marina; universally recommended	HIGH; a trained staff can effectively prevent and respond appropriately to environmental problems; trained staff can teach good practices to boaters and give a positive, proactive clean marina image and can attract new customers	HIGH; prevention and quick response will help keep water clean	LOW to MODERATE	LOW to MODERATE	Marina staff are the first people boaters ask about a marina's environmental practices
Insert language into facility contracts that promotes tenants' using certain areas and clean boating techniques when maintaining their boats. Use a contract that ensures that tenants will comply with the marina's best management practices	Marina; universally recommended	HIGH; all boaters using the marina must use the same practices as those adopted by the marina to protect the environment; use of contract language and clean boating agreements legally binds customer to comply; helps share liability for cleanup costs; gives management an effective control tool for boater who does not want to comply	MODERATE to HIGH; good water quality results from cooperation of many boaters	LOW	NONE	Language in slip contracts gives customers notice of what is required and helps them realize that the marina is serious about maintaining a clean marina and promoting clean boating practices
Have a clearly written environmental best management practices agreement for outside contractors to sign as a precondition to working on any boat in the marina	Marina; universally recommended	HIGH; outside contractors comply with marina's best management practices; a signed contract can help distribute liability for cleanup costs and fines to outside contractors responsible for the problem	MODERATE; adherence to marina BMP standards helps protect water quality	LOW	NONE	A legally binding environmental agreement/contract lets outside contractors know the marina is serious about clean boating in general; agreement, signature, and compliance together form a common marina management tool

BMP Summary Table 15. (cont.) PUBLIC EDUCATION MANAGEMENT						
Best Management Practice Examples	**Marina Location & Usage**	**Benefits to Marina**	**Projected Environmental Benefits**	**Initial Cost Estimate**	**Annual Operation & Maintenance Cost Estimate**	**Notes**
Participate with an organization that promotes clean boating practices	Marina; generally recommended	MODERATE to HIGH; by joining with existing environmental programs, the marina can use the materials (often free) provided for a local educational program	MODERATE; the environment is protected best when a common message is provided to all boaters	NONE to LOW	NONE to LOW	Become a Partner in the National Clean Boating Campaign; for more informa-tion visit their web site at <www.cleanboating.org>
Provide MARPOL placards	Boats; generally recommended	LOW; little effect on marina operations or costs	MODERATE; boaters return trash to shore-based facilities	NONE to LOW	NONE to LOW	Placards can be obtained from the U.S. Coast Guard or Center for Marine Conservation
Paint signs on storm drains	Storm drain inlets; generally recommended	MODERATE; lessens the chance that illegal substances will be discarded into storm drains	MODERATE; especially helpful where storm drains lead directly to surface waters	LOW	NONE to LOW	Paint in colorful, large, and obvious letters and pictures; indicate what surface waterbody receives the storm water, if applicable; having children help will raise their environmental awareness
Establish and educate marina patrons about rules governing fish cleaning	Marina; generally recommended	MODERATE; cooperative patrons lead to less work for marina staff	MODERATE; less fish waste discarded to basin waters	NONE to LOW	NONE to LOW	Rules are easy to follow when a convenient fish cleaning station is available
Educate boaters about good fish cleaning practices	Marina; generally recommended	LOW; lower cleanup costs and maintenance costs	MODERATE; less fish waste discarded to basin waters	NONE to LOW	NONE to LOW	See the Fish Waste management measure
Provide information on local waste collection and recycling programs	Marina; generally recommended	LOW to MODERATE; patrons might be more willing to take their recyclables to a local recycling center if none is available at the marina, reducing waste at the marina	MODERATE; recycling is an important waste reduction strategy	NONE to LOW	NONE to LOW	See the Solid Waste management measure
Hold clinics on safe fueling and bilge maintenance	Marina; generally recommended	MODERATE to HIGH; reduces the likelihood of a fuel spill and fire, of petroleum contamination in the water, and oil and grease spills on marina property	MODERATE; lowered incidence of fuel and other petroleum contamination	NONE to LOW	NONE to LOW	Spring, when many boaters are getting boats ready for the boating season, is a good time to hold clinics

BMP Summary Table 15. (cont.) PUBLIC EDUCATION MANAGEMENT

Best Management Practice Examples	Marina Location & Usage	Benefits to Marina	Projected Environmental Benefits	Initial Cost Estimate	Annual Operation & Maintenance Cost Estimate	Notes
Teach boaters how to fuel boats to minimize fuel spills	Marina; generally recommended	MODERATE to HIGH; reduces the likelihood of a fuel spill and fire, and of petroleum contamination in the water	MODERATE; lowered incidence of fuel and other petroleum contamination	NONE to LOW	NONE to LOW	See the Petroleum Control management measure
Stock phosphate-free, nontoxic cleaners and other environmentally friendly produts	Marina store; generally recommended	MODERATE to LOW; many such products are on the market, and patrons will welcome their availability for purchase at the marina	MODERATE; reduces the little spills that go unnoticed but add up to a lot of damage	NONE to LOW	NONE to LOW	See the Boat Cleaning management measure
Place signs in the water and label charts to alert boaters about sensitive habitat areas	Marina waters; generally recommended	MODERATE to HIGH; protection of shallow-water habitats helps protect shorelines from erosion	MODERATE; shallow-water environments are important ecologically	NONE to LOW	NONE to LOW	See the Boat Operation management measure; signs should be in multiple languages if appropriate.
Educate boaters to thoroughly clean their boats before boating in other waterbodies	Marina waters; generally recommended	MODERATE to HIGH; can prevent invasions of exotic species, which could be costly to control	MODERATE to HIGH; depends on whether the species has already established itself in the surrounding waters	NONE to LOW	NONE to LOW	

SECTION 5: DETERMINING POLLUTANT LOADS

Section 5 Contents

This section is included for those interested in the technical information used to determine the dynamics of water flow and water quality variations. Although numerical models provide an effective approach to evaluate design parameters, marina developers may use their own discretion in employing modeling techniques.

The use of an area for a marina might infringe on or preclude other uses of the resources, and it is this potential conflict that can be evaluated by using of water quality modeling. Marina basins can contain pollutants ranging from sanitary wastes to toxic metals leached from hulls and petroleum products discharged in engine exhaust. These wastes pose a variety of potential problems for water quality, including microbiological contamination of adjacent shellfish and swimming areas, depletion of dissolved oxygen in the water column or sediments, and toxic effects on estuarine biological resources. Water quality monitoring can be used before marina construction or expansion to determine the design (including basin shape and entrance locations and runoff controls) that will be the least disturbing to the surrounding aquatic environment. It can be used after marina construction to determine compliance with water quality criteria and what, if any, changes in design are necessary to meet any water quality criteria that have been violated.

Water quality criteria are based on pollutant concentrations. Concentrations of water quality constituents (such as dissolved oxygen [DO] or petroleum hydrocarbons) can be used to assess instantaneous conditions (water quality when the sample is taken) and conditions over time (samples taken daily for a week or a month). Concentrations of pollutants in water can be measured in storm water runoff before the runoff reaches a waterbody or in the waterbody of interest. If concentrations are measured in runoff, the timing is important. Pollutant concentrations usually vary widely during a rainstorm, typically being higher during the first wave or “first flush” of storm water, when pollutants accumulated since the previous storm are washed away, and lower later in the storm.

Concentrations also vary from storm to storm. Longer periods between storms allow more pollutants to accumulate on surfaces, whereas a storm that occurs shortly after a previous storm might carry very few pollutants in its runoff.

Time of year is also important. A storm that occurs during a week of peak boat maintenance activity is likely to carry more pollutants than a storm that occurs in the spring before the boating season begins. If nothing else, the pollutants carried by the storm runoff will be different. A storm in spring might carry more sediment and salt from winter road treatments, whereas one in summer might have more oil and debris from hull maintenance activities.

Pollutant loads in a marina basin can be measured by collecting samples at various times, depths, and places in the basin. For a simple assessment of water quality, samples of dissolved oxygen, fecal coliform bacteria, and perhaps water clarity (using a Secchi disk) might be performed. If sampling for assessment of meeting state water quality standards, samples for the constituents required by the state have to be taken and the samples might have to be analyzed by a state-approved laboratory.

Samples can be taken once for an indication of instantaneous water quality or over a period of time to assess average water quality conditions or trends in water quality (for example, whether water quality is worse over busy boating weekends or in particular seasons, or just after a storm and for how long after a storm has occurred). Comparison of samples of storm water runoff and samples of marina basin water quality might be used to determine whether degraded water quality during and shortly after storms is due to runoff from the marina property or from surrounding properties.

General water quality monitoring is discussed under the Water Quality Assessment management measure in Section 4. A discussion of models and monitoring, which supports their use for in-depth analyses of water quality and water quality changes that might occur from changes in marina configuration or marina construction, follows. The discussion is somewhat technical because it is anticipated that if these models are applied, they will be applied by persons trained in their use and familiar with their implementation. Those without a background in modeling can still benefit from reading the discussion to gain a general understanding of what modeling involves and to help decide whether modeling is appropriate for a particular marina and situation.

Example Models for Marina Flushing Assessment

Selection Criteria

To understand what is needed to apply a model, it is essential to focus on the physical, chemical, and biological processes that move water into and out of the marina area, control mixing with adjacent waters, regulate chemical reactions in the water and sediments, and facilitate biological growth and decay (die-off). A variable combination of winds, tides, currents, and density differences is responsible for the physical movement of water volumes and pollutants. The geometry of a site can also have a major effect on flushing and dispersion and is an important issue in selecting the model, collecting the data, and attaining the required water quality standards.

Biodegradation of organic material, growth and decay of bacteria and other organisms, nutrient uptake, and chemical transformations of various kinds are typical of the biochemical processes that affect contaminants. Physical, chemical, and biological processes should be combined to form a conceptual model of the site and its consequent contaminant assimilation potential. After the site in question has been conceptualized, the next step is to choose a model that incorporates the appropriate physical processes and biochemistry to predict water quality. Depending on the level of sophistication at which the assessment is taking place, the model selected might be a simple screening calculation (e.g., Tidal Prism Analysis) or a multidimensional numerical model (e.g., WASP4, DEM, WQM2D, or EFDC Hydrodynamic Model).

The models discussed here have been selected for the following reasons:

- They are in the public domain.

- They are available at a minimal cost from various public agencies.
- They are supported to a varying extent by federal or state agencies. The form of support is usually telephone contact with a staff of engineers and programmers who have experience with the model and can provide guidance (usually free of charge).
- They have been used extensively for various purposes and are generally accepted within the modeling profession.
- Together they form a sequence of increasingly more technically complex models; that is, each model takes additional phenomena into account in a more detailed manner than the preceding model.

Selection from among these models should be made on the basis of the model capabilities needed.

In addition to model capabilities, the two most important factors in the selection of a model are the adequacy of the documentation and the adequacy of the support available. The documentation should state the theory and assumptions in adequate detail, describe the program organization, and clearly present the input data requirements and format. A well-organized data scheme is essential. The support provided should include user access via telephone to programmers and engineers familiar with the model. Special support (including short courses or informational or personnel exchanges) might be available under existing intra-agency or interagency agreements or can be made available to the potential user. The support agency might also be able to provide the potential user with a list of local users who could be contacted for information regarding their past or current experience with the computer program. Table 5-1 presents documentation and user's support available for some of the models discussed in this section.

In addition to having adequate documentation and user's support, the selected model should address all marina water quality problems of concern.

The following section provides an overview of the best-qualified marina water quality model in each of the selected categories. These models are listed in Table 5-1, which provides information related to the operational features of the models. This information is provided to help in evaluating the estimated cost associated with and the ease of acquiring the model, getting the model running on the user's system, calibrating the model, and finally applying the model. Table 5-2 lists the level of effort involved in applying the models.

Models Selected

The most rigorous tools that can be used for assessing marina impacts on water quality are numerical models. Models range in complexity from simple desktop calculations to full three-dimensional models that simulate physical and chemical processes by solving equations of motion and rate equations for chemical processes.

The complexity of the model used and the quality of the input data determine the degree of resolution in the results. For example, in an early part of a study, the Tidal Prism Analysis strategy is used to obtain a general understanding of potential impacts caused by pollutant discharged from a proposed marina. It is likely that the simplified strategy will predict substantial impacts on the environment. Therefore, an advanced model is needed to conduct further detailed analyses. A mid-range model is used in situations where steady-state conditions may be assumed and tidal flushing is the predominant mode of flushing. A complex model is used in dynamic environments subject to complex circulation patterns and full biochemical kinetics, with sources and sinks for all dissolved constituents and for proposed marinas.

Simple Model

The methods listed here include desktop screening methodologies that calculate seasonal or annual mean pollutant concentrations based on steady-state conditions and simplified flushing time estimates. These models are designed to examine and isolate trouble spots for more detailed analyses. They should be used to highlight major water quality issues and important data gaps in the early stage of a study.

Methods presented in this section, particularly some of the mathematical descriptions, are

Table 5-1. Ease of application: Sources, support, and documentation.

Model	Source(s) of Model	Nature of Support	Adequacy of Documentation	Cost
Tidal Prism Analysis	USEPA, Region 4, Atlanta, GA. 1985. Chapter 4 of *Coastal Marinas Assessment Handbook*.	N/A	Excellent documentation with example application	Low
Flushing Characteristics Diagram	Christensen, B.A. 1989. Canal and marina flushing characteristics. *The Environmental Professional* 11:241-255.	N/A	Good illustrations with numerical example application	Low
NCDEM DO Model	North Carolina Dept. of Environmental Health and Natural Resources, Division of Environmental Management (919) 733-6510	Telephone contact	Good documentation with several applications	Medium
Tidal Prism Model	Virginia Institute of Marine Science, Gloucester Point, VA 23062 (804) 642-7212	Telephone contact	Excellent documentation of theory and assumptions; excellent user's guide with input and output information	Medium
WASP4	Center for Exposure Assessment Modeling, U.S. Environmental Protection Agency, Athens, GA 30613 (404) 546-3585	Software maintenance, workshop technical assistance through EPA channels	Excellent documentation of theory and assumptions; excellent user's guide with input and output information	High
EFDC Hydrodynamic Model	Virginia Institute of Marine Science, Gloucester Point, VA 23062 (804) 642-7212	Telephone contact	Excellent documentation of theoretical and computational aspects; excellent user's manual with input and output information; numerous papers written describing capabilities of the model	High

simplifications of more sophisticated techniques. These techniques, as presented, can provide reasonable approximations for screening potential impact problems when site-specific data are not available. The Tidal Prism Analysis was selected as the method of choice in this category. This method is capable of addressing all marina water quality issues of concern (e.g., dissolved oxygen and fecal coliform bacteria) and comes with excellent documentation. The primary strengths and advantages of the screening procedures are as follows:

- Excellent user documentation and guidance.

Table 5-2. Level of effort for best models.

Complexity	Model	Water Quality Problem	Approximate Level of Effort
Simple	Tidal Prism Analysis	DO, fecal coliform bacteria	1-2 Days
Mid-range	Tidal Prism Model	DO, BOD, nutrients, phytoplankton, fecal coliform	3-7 Days
Mid-range	NCDEM DO	DO	1-2 Days
Complex	WASP4	DO, BOD, nutrients, phytoplankton, toxics, fecal coliform	3-4 Weeks
Complex	EFDC Hydrodynamic	DO, BOD, temperature, salinity, nutrients, sediment, finfish, phytoplankton, shellfish, toxics, fecal coliform, eutrophication	4-6 weeks

Note: DO = dissolved oxygen, BOD = biological oxygen demand

- No computer is necessary because the procedures can be performed on hand calculators.
- Relatively simple procedures with minimal data requirements that can be satisfied from the user's manual when site-specific data are lacking.

The Tidal Prism Analysis procedures can be easily implemented in a computer program. This allows the user to test model sensitivity and determine the range of potential water quality impacts from a proposed marina quickly and efficiently.

Mid-Range Models

The recommended marina mid-range models are the Tidal Prism Model and the NCDEM DO Model. Both models are in the public domain, are easy to apply, and are supported with good documentation.

Tidal Prism Model

The Tidal Prism Model is a steady-state model capable of simulating up to 10 water quality variables, including dissolved oxygen and fecal coliform bacteria. The user's manual is well written and includes input/output examples, as well as guidance on how to calibrate and apply the model. Based on constituents modeled, the Tidal Prism Model is recommended as the best-qualified marina mid-range model. The primary strengths and advantages of the Tidal Prism Model are as follows:

- Excellent user documentation and guidance.
- Minimal computer storage requirements.
- Relatively simple procedures with data requirements that can be satisfied from existing data when site-specific time series data are lacking.

The Tidal Prism Model is applicable only to marinas where tidal forces are predominant with oscillating flow (e.g., an estuary or a tidal river). Therefore, the Tidal Prism Model can't be applied to marinas located on a sound, an open sea, or a lake or reservoir. Because the Tidal Prism Model is not applicable to most marina situations, the NCDEM DO model is recommended as an alternative best-qualified model for mid-range applications where the Tidal Prism Model isn't applicable.

NCDEM DO Model

The NCDEM DO model is a steady-state program that is capable of predicting only DO concentrations. The NCDEM DO model is applicable to one-, two-, and three-segment marinas. Model theory, assumptions, and input parameters are presented in adequate detail. Model documentation includes input and output examples of several applications as well as a listing of the model code. The model code is written in BASIC.

The NCDEM DO model incrementally mixes the ambient and marina waters as a function of the average lunar tides. The tidal variation is assumed to follow a sinusoidal distribution. For simplicity, a 12-hour tidal cycle is used. If this time-variable model is run through a sufficient number of tidal cycles, the average marina basin DO value approaches a steady-state value.

Complex Models

Complex models consist of two components—hydrodynamics and water quality. In this model category, hydrodynamics may be represented by numerical solution of the one-dimensional or the full two-dimensional equations of motion and continuity. Water quality conservation-of-mass equations are executed using the hydrodynamic output of water volumes and flows. The water quality component of the models calculates pollutant dispersion and transformation or decay, giving resultant concentrations over time. These models are very complex and require an extensive effort for specific applications.

Water Quality Analysis Simulation Program (WASP4)

The Water Quality Analysis Simulation Program, WASP4, is a dynamic compartment modeling system that can be used to analyze a variety of water quality problems in one, two, or three dimensions. WASP4 simulates the transport and transformation of conventional and toxic pollutants in the water column and benthos of ponds, streams, lakes, reservoirs, rivers, estuaries, and coastal waters. The WASP4 modeling system covers four major subjects—hydrodynamics, conservative mass transport, eutrophication-dissolved oxygen kinetics, and toxic chemical-sediment dynamics. The modeling system also includes a stand-alone hydrodynamic program called DYNHYD4, which simulates the movement of water. DYNHYD4 is a link-node model that can be driven by either constantly repetitive or variable tides. Unsteady inflows can be specified, as well as wind that varies in speed and direction. DYNHYD4 produces an output file of flows and volumes that can be read by WASP4 during the water quality simulation. WASP4 contains two separate kinetic submodels, EUTRO4 and TOXI4. EUTRO4 is a simplified version of the Potomac Eutrophication Model (PEM) and is designed to simulate most conventional pollutant problems. EUTRO4 can simulate up to eight state variables, including dissolved oxygen and fecal coliform. TOXI4 simulates organic chemicals, metals, and sediment in the water column and underlying bed.

The WASP4 model system is supported by the EPA's Center for Exposure Assessment Modeling (CEAM) in Athens, Georgia, and has been applied to many aquatic environments. The WASP4 model can be obtained from the CEAM web page (www.epa.gov/ceampubl/softwdos.htm). The water quality component is set up for a wide range of pollutants, and the model is the most versatile and most widely applicable of all models considered here. For these reasons WASP4 is the model of choice in this category. The primary strengths and advantages of the WASP4 model are as follows:

- *Documentation*: WASP4 has excellent user documentation and guidance. Theory and assumptions are presented in adequate detail; program organization and input data requirements and format are clearly presented.
- *Support*: User access is available by telephone to programmers and engineers familiar with the model. Occasional workshops, sponsored by CEAM, are available. The support agency (CEAM) can provide the potential user with a list of local users who could be contacted for information regarding their past or current experience with the computer program.

- *Flexibility*: Model users can add their own subroutines to model other constituents that might be more important to the specific application with minimal or virtually no programming effort required. The user can operate WASP4 at various levels of complexity to simulate some or all of these variables and interactions.

CEAM maintains and updates software for WASP4 and the associated programs. Continuing model development and testing within the CEAM community will likely lead to further enhancements and developments of the WASP4 modeling system. In fact, CEAM is currently supporting the development of a 3-dimensional (3-D) hydrodynamic model that will be linked to the WASP4 model.

EFDC Hydrodynamic Model

The environmental fluid dynamics code (EFDC) model was originally developed at the Virginia Institute of Marine Science (VIMS) for estuarine and coastal applications and is considered public domain software. It is a general-purpose modeling package for simulating three-dimensional flow, transport, and biogeochemical processes in surface water systems, including rivers, lakes, estuaries, reservoirs, wetlands, and coastal regions. In addition to hydrodynamic and salinity and temperature transport simulation capabilities, EFDC can simulate cohesive and noncohesive sediment transport, near-field and far-field discharge dilution from multiple sources, eutrophication processes, the transport and fate of toxic contaminants in the water and sediment phases, and the transport and fate of various life stages of finfish and shellfish. Special enhancements to the hydrodynamic portion of the code, including vegetation resistance, drying and wetting, hydraulic structure representation, wave-current boundary layer interaction, and wave-induced currents, allow refined modeling of wetland marsh systems, controlled flow systems, and nearshore wave-induced currents and sediment transport. The EFDC model has been extensively tested and documented for more than 20 modeling studies. The model is currently being used by a number of organizations, including universities, governmental organizations, and environmental consulting firms.

The structure of the EFDC model includes four major modules: (1) a hydrodynamics model, (2) a water quality model, (3) a sediment transport model, and (4) a toxics model (see Figure 5-1). The EFDC hydrodynamic model itself is composed of six transport modules—dynamics, dye, temperature, salinity, near-field plume, and drifter. Various products of the dynamics module (water depth, velocity, and mixing) are directly coupled to the water quality, sediment transport, and toxic models.

- *Documentation*: Extensive documentation of the EFDC model is available. Theoretical and computational aspects of the model are described by Hamrick (1992a). An excellent user's manual (Hamrick, 1996) is available and includes input file templates. A number of papers describe model applications and capabilities (Hamrick, 1992b, 1994; Hamrick and Wu, 1996; Moustafa and Hamrick, 1994; and Wu et al., 1996).

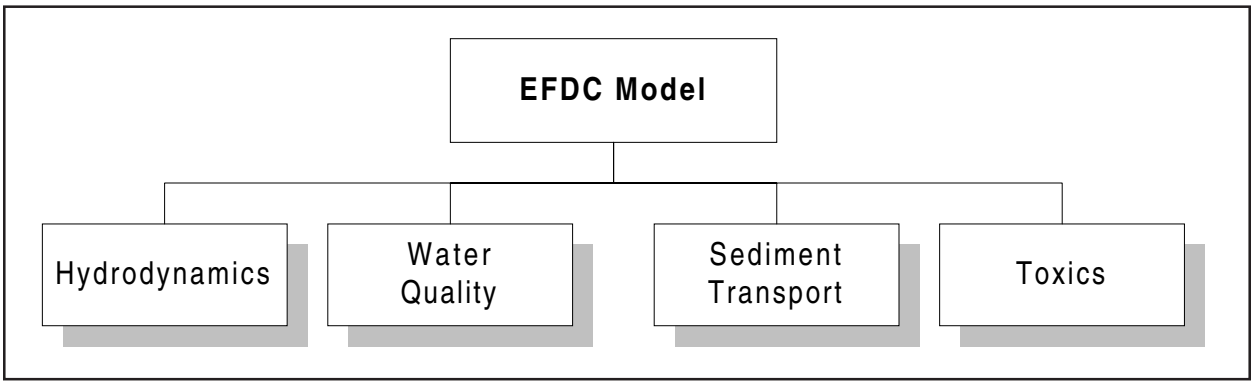

Figure 5-1. Structure of and modules associated with the EFDC model.

- *Support*: User access is available by telephone to programmers and engineers familiar with the model. VIMS can provide the potential user with a list of local users who could be contacted for model information.
- *Flexibility*: The EFDC model can be configured to execute all or a portion of a model application in reduced spatial dimension mode, including two-dimension depth or width averaged and one-dimension cross section averaged. The number of layers used in the three-dimension mode or two-dimension width averaged mode is readily changed by one line of model input. Model grid sections specified as two-dimension width-averaged are allowed to have depth-varying widths to provide representations equivalent to those of two-dimension width-averaged estuarine and reservoir models, such a CE-QUAL-W2.

Water Quality Monitoring in Marinas (for modeling applications)

Sampling Guidelines for Existing Marinas

General guidance is presented to develop the framework for a site-specific water quality sampling program suitable for an existing marina. A monitoring study at an existing marina may be requested by regulatory agencies if it is suspected that the marina is causing degradation of water quality standards. An overall monitoring program can consist of three phases or levels. In Level 1, preliminary screening is conducted to gather baseline information on the marina. If historical data on the marina are available, this level might not be needed or the quantity of data needed might be reduced. Based on the historical or Level 1 data, if it is established that the marina may be causing impacts on water quality, Level 2 sampling, which incorporates additional sampling of the receiving waters, would commence. If evaluation of Level 2 data also indicates that the marina is affecting water quality, marina design changes may be recommended and eventually implemented. Level 3 sampling would be initiated to evaluate the performance of any implemented marina design changes. Examples of potential marina design changes include removal of sills, which tend to trap water in the lower depths of a marina, and improvement of flushing by altering sharp corners within the marina or by enlarging the marina entrance.

Spatial Coverage

An intensive spatial coverage of the marina and the adjacent waterbody for some indicator or surrogate water quality parameter, such as salinity or turbidity, is generally needed to estimate spatial variability and to determine the model type and the segmentation required.

Generally, the spatial coverage of the modeled marina should extend away from the marina site to the extent that normal background levels for DO are encountered. At this location, model boundary conditions (i.e., surface elevations or current velocities) can be established. In this manner the total effect of the marina can be measured.

The preceding approach is appropriate when using complex models. Sampling stations for complex models should be spaced throughout the model grid system, with the spatial coverage being governed by the gradients in velocities and water quality constituents. For existing marinas, adjacent waterbodies are divided into a series of reaches for complex model application, with each reach described by a specific set of channel geometry dimensions (cross-sectional dimensions) and flow characteristics (flow rates, tidal range, velocities, and biochemical processes). The models assume that these conditions are uniform within each reach. Each reach is in turn divided into a series of model segments or computational elements to provide spatial variation for the water quality analysis. Each segment is represented by a grid point in the model where all water quality variables are computed. For the WASP4 model, the segment length is dependent on the degree of resolution desired and the natural variability in the system. Enough detail should be provided to characterize anticipated spatial variation in water quality.

The hydrodynamics of the Tidal Prism Model are based on the tidal prism volume at each segment. Therefore, the spatial coverage of a marina, using the Tidal Prism Model, includes the entire estuary/river where the marina is located. The length of

each segment is defined by the tidal excursion, the average distance traveled by a water particle on the flood tide, because this is the maximum length over which complete mixing can be assumed.

A sampling station for each model segment is the minimum requirement to calibrate the returning ratios of the Tidal Prism Model. Sampling stations should generally be located along the length of the estuary and in the main channel. The returning ratio is defined as the percentage of tidal prism that was previously flushed from the marina on the outgoing tide.

Constituents Sampled

The specific constituents that must be sampled, as well as the sampling frequency, depend to some extent on the particular modeling framework to be used in the analysis. The selected model should include all of the processes that are significant in the area under investigation without the unnecessary complexity of processes that are insignificant. A few preliminary measurements might be useful to define which processes are important.

The minimum sampling requirements for all dissolved oxygen studies should include dissolved oxygen, temperature, carbonaceous biochemical oxygen demand (CBOD), and total Kjeldahl nitrogen (TKN), because these parameters are fundamental to any dissolved oxygen analysis. Biochemical oxygen demand (BOD) is typically measured as 5-day BOD, but a few measurements of long-term BOD are also necessary. The Tidal Prism Model considers only the CBOD component, and therefore the model should be used only in situations where the nitrogenous components are known to be unimportant.

In addition to TKN, ammonia (NH_3) and nitrate (NO_{3G}) (or nitrite [NO_{2G}] plus nitrate) should be measured for dissolved oxygen investigations for both the Tidal Prism and WASP4 models. Even if ammonia, nitrate, and nitrite are not modeled, the data are useful for estimating the nitrogenous BOD decay rate or ammonia oxidation rate.

Concentrations of algal dry weight biomass or chlorophyll *a* should be measured because both the complex models and the Tidal Prism Model simulate algae growth for dissolved oxygen analysis. Light extinction coefficients (or Secchi depths) are also needed for the algal growth computations in dissolved oxygen analysis if the complex models are used.

In situ sediment oxygen demand (SOD) should be measured in situations where it is expected to be a significant component of the oxygen budget. This is most likely to occur in shallow areas where the organic content of the sediments is high or in deep marina basins where flushing is minimal. In developing a strategy for SOD measurement, it is logical to assume that those factors important in establishing model reaches or segments are also relevant to selecting SOD measurement sites. The more important of these factors are

- *Geometry*: depth and width.
- *Hydraulics*: velocity, slope, flow, and bottom roughness.
- *Water quality*: location of point sources, nonpoint source runoff, and abrupt changes in DO/SOD concentrations.

The most important factor for SOD is likely to be the location of abrupt changes in DO/BOD concentrations, such as areas surrounding the entrance channels of marinas and in the marina basin proper. The final point to consider is that SOD can vary with season. This observation is particularly relevant to marinas and adjacent areas dominated by algal activity and/or oxidation of organic and inorganic nutrients by benthic microorganisms, both of which can occur seasonally. The modeler should thus be aware of this potential concern and structure the SOD measurement times accordingly.

In addition to sampling for the constituents to be simulated, measurements are also necessary to help quantify the various coefficients and parameters included in the model equations. Coefficient values can be obtained in four ways: (1) direct measurement, (2) estimation from field data, (3) literature values, and (4) model calibration. Model calibration is usually required regardless of the selected approach. However, coefficients that tend to be site-specific or that can take on a wide range of values should be either measured directly

or estimated from field samples. These could include the following parameters:

- CBOD decay rate
- CBOD settling rate
- NH_3 oxidation rate (nitrogenous BOD decay rate)
- SOD

In addition to the preceding model parameters, which are determined primarily from the results of field sampling surveys, several other rate coefficients can be measured in the field. For example, stream reaeration rates for the WASP4 model and returning ratios for the Tidal Prism Model can be measured using tracer techniques. WASP4 provides several options for the reaeration rate equation because many of the equations are applicable to only certain ranges of depth and velocity.

Sampling Locations

Water quality data should be collected at the downstream boundary of the study area for model calibration. Adjacent waters both upstream and downstream should also be sampled to determine background concentrations of water quality constituents. Although a single downstream station is the minimum requirement for short channel sections, additional sampling stations are desirable to provide more spatial data for calibrating the model. Logical locations for additional stations are sharp corners and dead end segments in the marina basin proper. If the marina is segmented for a complex model application, each segment should be sampled. However, water quality variations might be negligible at stations located upstream and downstream immediately outside marinas.

In the Tidal Prism Model, water quality is assumed to be well mixed and uniform over each segment of the stream. Therefore, samples taken immediately downstream of the marina would probably not match conditions in the model unless they were taken far enough downstream for complete cross-sectional mixing to occur. In general, increased sampling should be allocated to those areas of the marina and the adjacent water that have the most impact (along the shoreline). In general, all of the major water quality parameters of interest (DO, CBOD, TKN, NH_3, NO_3, fecal coliform bacteria, temperature, and so forth) should be measured at each station in the sampling network.

Rate coefficients and model parameters can be estimated from literature values before site-specific measurements are available. For important parameters such as the BOD decay rate, sensitivity analyses can be performed to evaluate the effects of different coefficient values in formulating DO concentrations. These analyses should provide enough information so that sampling stations can be located in critical areas.

Sampling Time and Frequency

The duration and frequency of water quality sampling depend to a large extent on whether the Tidal Prism Model or a complex model will be used. The Tidal Prism Model computes water quality conditions only at slack before ebb; thus, sampling at a higher rate is not necessary. The complex models have a user-specified time step, which means that sampling should be more frequent for shorter time steps.

Because the Tidal Prism Model assumes that conditions remain constant with time, it is important to conduct the sampling program during a period when this assumption is valid. Synoptic surveys (e.g., sampling all stations over 2 to 3 days) should be conducted to the extent possible so that water quality conditions at different locations are not affected significantly by changes in the weather or variations in the marina discharge that are not accounted for in the model. However, since temperature varies diurnally and temperature influences the process rates of most biological and chemical reactions, some variability in the sampling results will be inevitable. It should be noted that the Tidal Prism Model uses the first day of field data as initial and boundary condition input to the model. Field data from succeeding cycles are then used to compare the output simulations at the same cycle.

Complex models compute continuous changes that occur over time because of variations in stream flow, temperature, nonpoint and point

source loadings, meteorology, and processes occurring within a marina and its adjacent waters. All of the factors that are assumed constant for a Tidal Prism analysis are free to vary continuously with time in a complex model. This feature allows an analysis of diurnal variations in temperature and water quality, as well as continuous prediction of daily variations or even seasonal variations in water quality.

Application of a complex model requires a much more detailed sampling program than that required by a mid-range model. Enough data should be collected to define the temporal variations in water quality throughout the simulation period at the model boundary conditions. Therefore, more frequent data collection should be conducted at the model boundary condition. Complex models investigate the temporal variations in dissolved oxygen and fecal coliform bacteria much better than mid-range models. To achieve this resolution, intensive surveys should be mixed with long-term trend monitoring. The significance of the temporal variations depends on the context of the problem. For example, if the daily average dissolved oxygen concentration is around 5 mg/L or less, a diurnal variation of less than 1 mg/L could be very important with respect to meeting water quality standards; if the average dissolved oxygen concentration is around 10 mg/L, diurnal variations are important and the sampling program should include 2 or 3 days of intensive sampling for dissolved oxygen and temperature at all of the key stations. As a minimum, these stations would include the stations designated as the model boundary, as well as the stations surrounding the marina and adjacent waters and stations within the marina. These locations satisfy the minimum requirements of defining the boundary and loading conditions, plus a few calibration stations in the critical areas for DO, SOD, and fecal coliform bacteria.

Long-term dynamic simulations of seasonal variations in stream water quality might be impractical. Where seasonal variation is of interest, the typical practice is to run the Tidal Prism Model or a complex model (with short-term simulations) several times for different sets of conditions that represent the full spectrum of conditions expected over the period of interest. Enough data should be collected to characterize the seasonal variations and to provide adequate data for calibrating and applying the model. If possible, enough data should be collected to cover the full range of conditions of the model analysis. As a minimum, these should include conditions during the critical season for the water quality variable of interest. For DO, for example, the critical season occurs during the hot summer months (July through September).

Two general types of studies can be defined—*intensive surveys*, which are those used to identify short-term variations in water quality, and *trend monitoring*, which is used to estimate trends or mean values. Intensive surveys are intended to identify intertidal variations or variations that occur because of a particular event in order to make short-term forecasts. Intensive surveys should encompass at least four full tidal cycles. They should usually be conducted regardless of the type of modeling study being conducted. Boundary conditions should be measured concurrently with the monitoring of the marina basin and the adjacent water. A record of all point source waste loads located near the marina site during the week before the survey is recommended. Variables that should be sampled during the intensive surveys include tide, current velocity, salinity, DO, fecal coliform bacteria, nitrogen, and phosphorus, measured hourly.

Trend monitoring is conducted to establish seasonal and long-term trends in water quality. Trend sampling may take place on a biweekly or monthly basis for a year at a time. Stations should be sampled at a consistent phase of the tide and time of day to minimize tidal and diurnal influences on water quality variations. Some stations may be selected for more detailed evaluation during the intensive survey. Long-term trend monitoring should also be considered as a way to track changes in water quality between the intensive surveys.

Most states have water quality standards for the 24-hour average concentration and the instantaneous minimum concentration of DO. Therefore, it is important to collect DO data throughout a complete cycle, that is, from the high value, which normally occurs at mid-afternoon, to the low

value, which usually occurs at dawn. This approach will allow the DO range in the model to be calibrated to specific field conditions. If the waterbody is stratified, samples should be collected at the surface, mid-depth (above and below the thermocline and pycnocline, if possible), and bottom. In general, it is necessary to collect samples at a 2-hour frequency over a 24-hour period to adequately define the daily average and the minimum DO concentrations.

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GLOSSARY

Bathymetric: Pertaining to the depth of a waterbody.

Bed load transport: Sediment transport along the bottom of a waterbody due to currents.

Benthic: Associated with the bottom of a waterbody.

Biocriteria: Biological measures, such as the incidence of cancer in benthic fish species, that indicate the health of an environment.

BOD: Biochemical oxygen demand; the quantity of dissolved oxygen used by microorganisms in the biochemical oxidation of organic matter and oxidizable inorganic matter by aerobic biological action.

CBOD: Carbonaceous biochemical oxygen demand; the quantity of dissolved oxygen used by microorganisms in the biochemical oxidation of organic matter by aerobic biological action.

Circulation cell: See *gyre*.

Conservative pollutant: A pollutant that remains chemically unchanged in the water.

Critical habitat: A habitat determined to be important to the survival of a threatened or endangered species, to general environmental quality, or for other reasons as designated by the state or federal government.

CVA: Clean Vessel Act of 1992 (P.L. 102-587, Subtitle F); provides funding to states for the construction, renovation, operation, and maintenance of additional pumpout facilities and sanitary waste reception facilities at marinas and other vessel facilities.

CWA: Clean Water Act. Popular name for the Federal Water Pollution Control Act (33 U.S.C. 1251–1376), amended in 1972 by the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500).

CZARA: Coastal Zone Act Reauthorization Amendments of 1990. Amended the Coastal Zone Management Act of 1972 (16 U.S.C. 1451–1464, Chapter 33; Public Law 92-583).

DO: Dissolved oxygen; the concentration of free molecular oxygen in the water column.

Drogue-release study: A study of currents and circulation patterns using objects, or drogues, placed in the water at the surface or at specified depths.

Dye-release study: A study of dispersion using nontoxic dyes.

EPA: The United States Environmental Protection Agency, the federal agency charged with ensuring that federal laws protecting human health and the environment are enforced fairly and effectively.

Exchange boundary: The boundary between one waterbody, e.g., a marina, and its parent waterbody; usually the marina entrance(s).

Fecal coliform bacteria: Bacteria present in mammalian feces, used as an indicator of the presence of human feces, bacteria, viruses, and pathogens in the water column.

Fixed breakwater: A breakwater constructed of solid, stationary materials.

Floating breakwater: A breakwater constructed to possess a limited range of movement.

Flushing time: Time required for a waterbody, e.g., a marina, to exchange its water with water from the parent waterbody.

GIS: geographical information system; a computer-based system for representing geographical data and information.

Gyre: A mass of water circulating as a unit and separated from other circulating water masses by a boundary of relatively stationary water.

Hydrographic: Pertaining to ground or surface water.

Ichthyofauna: Fish.

Macrophytes: Plants visible to the naked eye.

Mathematical modeling: Predicting the performance of a design based on mathematical equations.

Micron: Micrometer; one one-millionth (0.000001) of a meter.

NCDEM DO model: A mathematical model for calculating dissolved oxygen (DO) concentrations developed by the North Carolina Division of Environmental Management (NCDEM).

No-discharge zone, or NDZ: An area where the discharge of polluting materials is not permitted.

NPDES: National Pollutant Discharge Elimination System. A permitting system for point source polluters regulated under section 402 of the Clean Water Act.

Numerical modeling: See *mathematical modeling*.

Nutrient transformers: Biological organisms, usually plants, that remove nutrients from water and incorporate them into tissue matter.

OPA: Oil Pollution Act of 1990 (33 USCA 2701-2761).

Organics: Carbon-containing substances such as oil, gasoline, and plant matter.

PAH: Polynuclear aromatic hydrocarbon; multiringed carbon molecules resulting from the burning of fossil fuels, wood, etc.

Physical modeling: Using a small-scale physical structure to simulate and predict the performance of a full-scale structural design.

Rapid bioassessment: An assessment of the environmental degradation of a waterbody based on a comparison between a typical species assemblage in a pristine waterbody and that found in the waterbody of interest.

Removal efficiency: The capacity of a pollution control device to remove pollutants from wastewater or runoff.

Residence time: The length of time water remains in a waterbody. Generally the same as *flushing time*.

Riparian: For the purposes of this report, riparian refers to areas adjoining coastal waterbodies, including rivers, streams, bays, estuaries, coves, and the like.

Sensitivity analysis: Modifying a numerical model's parameters to investigate the relationship between alternative [marina] designs and water quality.

Shoaling: Deposition of sediment causing a waterbody or location within a waterbody to become more shallow.

Significant: A quantity, amount, or degree of importance determined by a state or local government.

SOD: Sediment oxygen demand; the biochemical oxygen demand of microorganisms living in sediments.

Suspended solids: Solid materials that remain suspended in the water column.

Tidal prism: The difference in the volume of water in a waterbody between low tide and high tide.

Tidal range: The difference in height between mean low tide and mean high tide.

Velocity shear: Friction created by two masses of water moving in different directions or at different speeds in the same direction.

WASP4 model: A generalized modeling system for contaminant fate and transport in surface waters; may be applied to biochemical oxygen demand, dissolved oxygen, nutrients, bacteria, and toxic chemicals.

Appendix A

Best Management Practices Checklist for Marinas and Recreational Boating

BEST MANAGEMENT PRACTICES CHECKLIST FOR MARINAS AND RECREATIONAL BOATING

Name of marina: _____

Marina address: _____

Name of person doing assessment: _____

Date of assessment: _____

This best management practices (BMP) checklist is designed to help marina owners and operators review the general activities associated with developing or expanding recreational marinas and boat ramps and operating existing marinas. Several BMPs and combinations of BMPs might be necessary at a marina to prevent or reduce runoff pollutants. Professionals can also use this checklist to review new marina development or expansion.

The BMP tables in the guidance provide detailed descriptions and the applicability of various management measures and practices. The lists provided here can be used to assemble information on the BMPs installed or used at the marina. If BMPs other than those listed are used, they may be identified in the space provided.

The scope of this guidance is broad, covering diverse nonpoint source pollutants from marinas and recreational boating. Because it includes all types of waterbodies, it does not provide all practices and techniques suitable to all regional or local marina or waterbody conditions. Also, BMPs are continually being modified and developed as a result of experience gained from their implementation and the innovation of marina owners and operators across the country.

The guidance can assist marina owners and managers in identifying potential sources of nonpoint source pollution and offer potential solutions. Finding the best solution to any nonpoint source pollution problem at a marina requires taking into account the many site-specific factors that together compose the setting of the marina. The applicability of BMPs to any particular marina or situation can be determined based on site-specific factors unique to the marina site.

1. MARINA FLUSHING

Site and design marinas such that tides and/or currents will aid in flushing of the site or renew its water regularly.

Marina water quality depends on water circulation within the boat basin, the level of pollutants present, and new amounts of pollutants entering the water. In a poorly flushed marina, pollutants tend to concentrate in the water and/or sediments. In a basin with poorly flushed corners or secluded or protected spots, pollutants and debris can tend to collect in those locations. Stagnant, polluted water can be the consequence. The flushing rate is the time required to replace the water in a basin. In tidal waters flushing is driven primarily by the ebb and flow of the tide, whereas in inland lakes and rivers flushing depends on wind-driven circulation and current speed. Pollutants tend to concentrate in water and/or sediments in poorly flushed coves and marinas. Fine sediment and organic debris can collect in uncirculated water, which can deplete the amount of oxygen in the water. Reduced dissolved oxygen in stagnant water hinders biological activity and can result in lifeless shores and offensive odors. Adequate marina flushing greatly reduces or eliminates the potential for water stagnation and helps maintain the biological productivity and aesthetic value of a marina basin. Good flushing can reduce pollutant concentrations in a marina basin by from 70 percent to almost 90 percent over a 24-hour period.

BMPs that should be considered and used where appropriate:

- ☐ *Ensure that the bottom of the marina and entrance channels are not deeper than adjacent navigable channels.*
- ☐ *Consider design alternatives in poorly flushed waterbodies to enhance flushing (open design instead of a semienclosed design, wave attenuators instead of fixed breakwaters).*
- ☐ *Design new marinas with as few enclosed water sections or separated basins as possible to promote circulation within the entire basin.*
- ☐ *Consider the value of entrance channels in promoting flushing when designing or reconfiguring a marina.*
- ☐ *Establish two openings at the most appropriate locations within the marina to promote flow-through currents.*
- ☐ *Consider mechanical aerators to improve flushing and water quality where basin and entrance channel configuration cannot provide adequate flushing.*
- ☐ *Other (describe):*

2. WATER QUALITY ASSESSMENT

Assess water quality as part of marina siting and design.

Water quality is assessed during the marina design phase to predict the effect of marina development on the chemical and physical health of the water and aquatic environment. Marina development can cause changes in flushing and circulation; and boat maintenance, boat operation, and the human activities in and around boats can be sources of solid and liquid wastes, pathogenic organisms, and petroleum compounds. The results of water quality predictions or sampling are compared to state or federal water quality standards. Water quality assessments for dissolved oxygen concentration and pathogenic organisms can be used as indicators of the general health of an aquatic environment. Water quality assessments can be useful in determining the suitability of a location for marina development, the best marina design for ensuring good water quality, and the causes and sources of water quality problems.

BMPs that should be considered and used where appropriate:

- ☐ *Use water quality sampling and/or monitoring to measure water quality conditions.*
- ☐ *Use a water quality modeling methodology to predict postconstruction water quality conditions.*
- ☐ *Monitor water quality using indicators.*
- ☐ *Use rapid bioassessment techniques to monitor water quality.*
- ☐ *Establish a volunteer monitoring program.*
- ☐ *Other (describe):*

3. HABITAT ASSESSMENT

Site and design marinas to protect against adverse effects on shellfish resources, wetlands, submerged aquatic vegetation, or other important riparian and aquatic habitat areas as designated by local, state, or federal governments.

The construction of a new marina in any waterbody type has the potential to disrupt aquatic habitats. These habitats include fish spawning areas, shellfish harvesting areas, designated wetlands, beds of submerged aquatic vegetation, and the habitats of threatened or endangered species. Marinas can be designed and located to help support the aquatic plants and animals that were present in the waters before the marina's construction. A marina can be operated as a valuable habitat for plants and animals that do well in quiet, sheltered waters.

BMPs that should be considered and used where appropriate:

- ☐ *Conduct habitat surveys and characterize the marina site, including identifying any exotic or invasive species.*
- ☐ *Assess habitat function (e.g., spawning area, nursery area, feeding area) to minimize indirect effects.*
- ☐ *Use rapid bioassessment techniques to assess effects on biological resources.*
- ☐ *Redevelop waterfront sites that have been previously disturbed and expand existing marinas.*
- ☐ *Consider alternative sites where adverse environmental effects will be minimized or positive effects will be maximized.*
- ☐ *Create new habitats or expand habitats in the marina basin.*
- ☐ *Minimize disturbance of riparian areas.*
- ☐ *Use dry stack storage.*
- ☐ *Other (describe):*

4. SHORELINE AND STREAMBANK STABILIZATION

Where shoreline or streambank erosion is a nonpoint source pollution problem, shorelines and streambanks should be stabilized. Vegetative methods are strongly preferred unless structural methods are more cost-effective, considering the severity of wave and wind erosion, offshore bathymetry, and the potential adverse impact on other shorelines, streambanks, and offshore areas.

Protect shorelines and streambanks from erosion due to uses of either the shorelands or adjacent surface waters.

Erosion in any waterbody is a natural process that results when moving water and waves undermine, collapse, and wash out banks and shorelines. Banks erode along nontidal lakes, rivers, and streams; shorelines erode along intertidal portions of coastal bays and estuaries. Eroding streambanks and shorelines and streambanks do not protect the land and structures during storm events. Such erosion contributes to nonpoint source pollution problems, turbidity, and shoaling and increases the need for maintenance dredging in marina basins and channels. Vegetation and structural methods have been shown to be effective for mitigating shoreline erosion and for filtering pollutants from overland and storm water runoff.

BMPs that should be considered and used where appropriate:

- ☐ *Use vegetative plantings, wetlands, beaches, and natural shorelines where space allows.*
- ☐ *Where shorelines need structural stabilization and where space and use allow, riprap revetment is preferable to a solid vertical bulkhead.*
- ☐ *Where reflected waves will not endanger shorelines or habitats and where space is limited, protect shorelines with structural features such as vertical bulkheads.*
- ☐ *At boat ramps, retain natural shoreline features to the extent feasible and protect disturbed areas from erosion.*
- ☐ *Other (describe):*

5. STORM WATER RUNOFF MANAGEMENT

Implement effective runoff control strategies that include the use of pollution prevention activities and the proper design of hull maintenance areas.

Reduce the average annual loadings of total suspended solids (TSS) in runoff from hull maintenance areas by 80 percent. For the purposes of this measure, an 80 percent reduction of TSS is to be determined on an average annual basis.

Sanding dust, paint chips, metal filings, and other such solids that drop on the ground during boat repair and maintenance can all be swept into the water by the next rainstorm's runoff. Oils, grease, solvents, paint drippings, and fuel spilled or dripped onto the ground are also be carried away in runoff. Unless runoff is treated in some manner, all of these pollutants end up in the marina basin, where they create unsightly surface films or float until they adhere to a surface, such as a boat hull. Some of these pollutants sink to the bottom, where they can be eaten by bottom-feeding fish or filter-feeding shellfish, or settle onto the leaves of aquatic vegetation and clog their pores.

BMPs that should be considered and used where appropriate:

- ☐ *Perform as much boat repair and maintenance work as possible inside work buildings.*
- ☐ *Where an inside work space is not available, perform abrasive blasting and sanding within spray booths or tarp enclosures.*
- ☐ *Where buildings or enclosed areas are not available, provide clearly designated land areas for boat repair and maintenance.*
- ☐ *Design hull maintenance areas to minimize contaminated runoff.*
- ☐ *Use vacuum sanders both to remove paint from hulls and to collect paint dust and chips.*
- ☐ *Restrict the types and/or amount of do-it-yourself work done at the marina.*
- ☐ *Clean hull maintenance areas immediately after any maintenance to remove debris, and dispose of collected material properly.*
- ☐ *Capture and filter pollutants out of runoff water with permeable tarps, screens, and filter cloths.*
- ☐ *Sweep and/or vacuum around hull maintenance areas, roads, and driveways frequently.*
- ☐ *Sweep parking lots regularly.*
- ☐ *Plant grass between impervious areas and the marina basin.*
- ☐ *Construct new or restore former wetlands where feasible and practical.*
- ☐ *Use porous pavement where feasible.*
- ☐ *Install oil/grit separators to capture petroleum spills and coarse sediment.*
- ☐ *Use catch basins where storm water flows to the marina basin in large pulses.*
- ☐ *Add filters to storm drains that are located near work areas.*
- ☐ *Place absorbents in drain inlets.*

- ☐ *Use chemical and filtration treatment systems only where necessary.*
- ☐ *Other (describe):*

6. FUELING STATION DESIGN

Design fueling stations to allow for ease in cleanup of spills.

Spills of gasoline and diesel oil during boat fueling are a common source of pollution in marina waters. Usually these are very small spills that occur from overfilling boat fuel tanks, but these small spills can accumulate to create a larger pollution problem. The hydrocarbons in oil harm juvenile fish, upset fish reproduction, and interfere with the growth and reproduction of bottom-dwelling organisms. Oil and gas ingested by one animal can be passed to the next animal in the food chain, ultimately resulting in a potential risk to human health. In a marina, petroleum spills also deteriorate the white Styrofoam in floats and docks and discolor boat hulls, woodwork, and paint. Gasoline spills are also a safety problem because of the flammability of this product. The most effective way to minimize fuel spills and petroleum hydrocarbon pollution at a marina is to locate, design, build, and operate a boat fuel dock or station so that most spills are prevented and those that do occur are quickly contained and cleaned up.

BMPs that should be considered and used where appropriate:

- ☐ *Use automatic shutoffs on fuel lines and at hose nozzles to reduce fuel loss.*
- ☐ *Remove old-style fuel nozzle triggers that are used to hold the nozzle open without being held.*
- ☐ *Install personal watercraft (PWC) floats at fuel docks to help drivers refuel without spilling.*
- ☐ *Regularly inspect, maintain, and replace fuel hoses, pipes, and tanks.*
- ☐ *Install a spill monitoring system.*
- ☐ *Train fuel dock staff in spill prevention, containment, and cleanup procedures.*
- ☐ *Install easy-to-read signs on the fuel dock that explain proper fueling, spill prevention, and spill reporting procedures.*
- ☐ *Locate and design boat fueling stations so that spills can be contained, such as with a floating boom, and cleaned up easily.*
- ☐ *Write and implement a fuel spill recovery plan.*
- ☐ *Have spill containment equipment storage, such as a locker attached or adjacent to the fuel dock, easily accessible and clearly marked.*
- ☐ *Other (describe):*

7. PETROLEUM CONTROL

Reduce the amount of fuel and oil from boat bilges and fuel tank air vents entering marina and surface waters.

Although more than half of the oil that spills into the water evaporates, less than a cup of oil can create a very thin sheen over more than an acre of calm water. Small amounts of oil spilled from numerous boats can accumulate to create a large oil sheen, which blocks oxygen from moving through the surface of the water and can be harmful to animals and larvae that must break the surface to breathe. The hydrocarbons in oil harm juvenile fish, upset fish reproduction, and interfere with the growth and reproduction of bottom dwelling organisms. Oil and gas ingested by one animal can be passed to the next animal in the food chain, ultimately resulting in a risk to human health. In a marina, petroleum spills also dissolve the white Styrofoam in floats and docks and discolor boat hulls, woodwork, and paint. Gasoline spills, which evaporate quickly, are also a safety problem because of the flammability of gasoline.

BMPs that should be considered and used where appropriate:

- ☐ *Promote the installation and use of fuel/air separators on air vents or tank stems of inboard fuel tanks to reduce the amount of fuel spilled into surface waters during fueling*
- ☐ *Avoid overfilling fuel tanks*
- ☐ *Provide doughnuts or small petroleum absorption pads to patrons to use while fueling to catch splashback and the last drops when the nozzle is transferred back from the boat to the fuel dock.*
- ☐ *Keep engines properly maintained for efficient fuel consumption, clean exhaust, and fuel economy. Follow the manufacturer's specifications.*
- ☐ *Routinely check for engine fuel leaks and use a drip pan under engines.*
- ☐ *Avoid pumping any bilge water that is oily or has a sheen. Promote the use of materials that either capture or digest oil in bilges. Examine these materials frequently and replace as necessary.*
- ☐ *Extract used oil from absorption pads if possible, or dispose of it in accordance with petroleum disposal guidelines.*
- ☐ *Prohibit the use of detergents and emulsifiers on fuel spills.*
- ☐ *Other (describe):*

8. LIQUID MATERIALS MANAGEMENT

Provide and maintain appropriate storage, transfer, containment, and disposal facilities for liquid material, such as oil, harmful solvents, antifreeze, and paints, and encourage recycling of these materials.

Liquid material such as fuels, oils, solvents, paints, pesticides, acetone, cleaners, and antifreeze are potentially harmful or deadly to wildlife, pets, and humans and are toxic to fish and other aquatic organisms when they enter a waterbody. This is true for other types of liquid waste, such as waste fuel, used oil, spent solvents, battery acid, and used antifreeze. Waste oils include waste engine oil, transmission fluid, hydraulic fluid, and gear oil. Waste fuels include gasoline, diesel, gasoline/oil blends, and water contaminated by these fuels.

BMPs that should be considered and used where appropriate:

- ☐ *Build curbs, berms, or other barriers around areas used for liquid material storage to contain spills.*
- ☐ *Store liquid materials under cover on a surface that is impervious to the type of material stored.*
- ☐ *Storage and disposal areas for liquid materials should be located in or near repair and maintenance areas, undercover, protected from runoff with berms or secondary containment, and away from flood areas and fire hazards.*
- ☐ *Store minimal quantities of hazardous materials*
- ☐ *Provide clearly labeled, separate containers for the disposal of waste oils, fuels, and other liquid wastes.*
- ☐ *Recycle liquid materials where possible.*
- ☐ *Change engine oil and suction oily water from bilges using nonspill vacuum-type systems for spill-proof oil changes.*
- ☐ *Use antifreeze and coolants that are less toxic to the environment.*
- ☐ *Use alternative liquid materials where practical.*
- ☐ *Follow manufacturer's directions and use nontoxic or low-toxicity pesticides.*
- ☐ *Burn used oil used as a heating fuel where permitted by law.*
- ☐ *Prepare a hazardous materials spill recovery plan and update it as necessary.*
- ☐ *Keep adequate spill response equipment where liquid materials are stored.*
- ☐ *Other (describe):*

9. SOLID WASTE MANAGEMENT

Properly dispose of solid wastes produced by the operation, cleaning, maintenance, and repair of boats to limit entry of solid wastes to surface waters.

Boat maintenance, painting, and repair can result in a range of waste materials, such as sanding debris, antifoulant paint chips, scrap metal, fiberglass pieces, sweepings, and battery lead and acid. Other solid waste such as bottles, plastic bags, aluminum cans, coffee cups, six-pack rings, disposable diapers, wrapping paper, glass bottles, cigarette filters, and fishing line can come from general boating activities and marina use. Living organisms and the habitats of aquatic animals and plants are harmed by this type of debris after it enters the water. A litter-free marina is more attractive to present and potential customers. Reducing a marina's solid wastes also reduces overall disposal costs.

BMPs that should be considered and used where appropriate:

- ☐ *Encourage marina patrons to avoid doing any debris-producing hull maintenance while their boats are in the water. When maintenance is done with the boat in the water (for small projects and where necessary), prevent debris from falling into the water.*
- ☐ *Place trash receptacles in convenient locations for marina patrons. Covered dumpsters and trash cans are ideal.*
- ☐ *Provide trash receptacles at boat launch sites.*
- ☐ *Provide facilities for collecting recyclable materials.*
- ☐ *Provide boaters with trash bags.*
- ☐ *Use a reusable blasting medium.*
- ☐ *Require patrons to clean up pet wastes and provide a specific dog walking area at the marina.*
- ☐ *Other (describe):*

10. FISH WASTE MANAGEMENT

Promote sound fish waste management through a combination of fish-cleaning restrictions, public education, and proper disposal of fish waste.

Sportfishing is very popular, but fish cleaning produces waste that can create water quality problems in marinas with poor circulation. Too much fish waste in a confined area can lower oxygen levels in the water, which leads to foul odor and fish kills. Floating fish parts are also an unsightly addition to marina waters.

BMPs that should be considered and used where appropriate:

- ☐ *Clean fish offshore where the fish are caught and discard of the fish waste at sea (if allowed by the state).*
- ☐ *Install fish cleaning stations at the marina, and at boat launch sites.*
- ☐ *Compost fish waste where appropriate.*
- ☐ *Freeze fish parts and reuse them as bait or chum on the next fishing trip.*
- ☐ *Encourage catch-and-release fishing, which does not kill the fish and produced no fish waste.*
- ☐ *Other (describe):*

11. SEWAGE FACILITY MANAGEMENT

Install pumpout, dump station, and restroom facilities where needed at new and expanding marinas to reduce the release of sewage to surface waters. Design these facilities to allow ease of access and post signage to promote use by the boating public.

Boat sewage can be a problem when dumped overboard without any treatment. Although the volume of sewage discharged from boats is not as massive as a typical sewage treatment plant outfall, boat sewage is very concentrated and can add to the overall problem of fecal coliform bacteria loading to the water body. Boat sewage also adds extra nutrients that use dissolved oxygen and can stimulate the growth of algae, which in the worst case can grow so fast that they use oxygen needed by fish and other organisms. When untreated sewage goes overboard, it can contaminate shellfish, leading to potentially serious human health risks.

BMPs that should be considered and used where appropriate:

- ☐ *Install pumpout facilities where needed. Use a system compatible with the marina's needs (fixed-point systems, dump stations for portable toilets, portable systems, dedicated slipside systems).*
- ☐ *Provide pumpout service at convenient times and at a reasonable cost.*
- ☐ *Keep pumpout stations clean and easily accessible, and consider having marina staff do pumpouts.*
- ☐ *Provide portable toilet dump stations near small slips and launch ramps.*
- ☐ *Provide restrooms at all marinas and boat ramps.*
- ☐ *Consider declaring marina waters to be a "no discharge" area.*
- ☐ *Establish practices and post signs to control pet waste problems.*
- ☐ *Avoid feeding of wild birds in the marina.*
- ☐ *Establish no discharge zones to prevent any sewage from entering boating waters.*
- ☐ *Establish equipment requirement policies that prohibit the use of Y-valves on boats on inland waters.*
- ☐ *Other (describe):*

12. MAINTENANCE OF SEWAGE FACILITIES

Ensure that sewage pumpout facilities are maintained in operational condition and encourage their use.

When faced with nonfunctioning sewage collection and disposal facilities, boaters whose holding tanks are full have three choices: (1) go elsewhere to find an operable pumpout or dump station, which is inconvenient; (2) discharge sewage directly overboard, which is illegal in no discharge zones and legal otherwise only through an approved marine sanitation device in nearshore waters; or (3) cease using their boat toilets, which to some would mean "stop using the boat." In addition, one inoperable pumpout might overload another pumpout nearby, tempting boaters to discharge illegally, particularly if the other one is not free or charges a higher fee.

BMPs that should be considered and used where appropriate:

- ☐ *Maintain a dedicated fund and issue a contract for pumpout and dump station repair and maintenance (applies to government-operated marinas, pumpout stations, and dump stations only).*
- ☐ *Regularly inspect and maintain sewage facilities.*
- ☐ *Disinfect the suction connection of a pumpout station (stationary or portable) by dipping it into or spraying it with disinfectant.*
- ☐ *Maintain convenient, clean, dry, and pleasant restroom facilities in the marina.*
- ☐ *Other (describe):*

13. BOAT CLEANING

For boats that are in the water, perform cleaning operations to minimize, to the extent practicable, the release to surface waters of (a) harmful cleaners and solvents and (b) paint from in-water hull cleaning.

Many boat cleaners contain harsh chlorine, ammonia, phosphates, and other chemicals that can harm fish and other aquatic life. Some chemicals in these cleaners become more concentrated in aquatic organisms as they are ingested by other animals and might eventually find their way into fish and shellfish that are eaten by people. Chemicals and debris from washing boat topsides, decks, and hull surfaces can be kept out of the water with some common sense boating practices.

BMPs that should be considered and used where appropriate:

- ☐ *Wash boat hulls above the waterline by hand. Where feasible, remove boats from the water and clean them where debris can be captured and properly disposed of.*
- ☐ *Buy and use detergents and cleaning compounds that will have minimal impact on the aquatic environment.*
- ☐ *Avoid in-the-water hull scraping or any abrasive process that is done underwater that could remove paint from the boat hull.*
- ☐ *Switch to long-lasting and low-toxicity or nontoxic antifouling paints.*
- ☐ *Minimize the impacts of wastewater from pressure washing.*
- ☐ *Other (describe):*

14. BOAT OPERATION

Manage boating activities where necessary to decrease turbidity and physical destruction of shallow-water habitat.

Boat and personal watercraft traffic through very shallow water and nearshore areas at wake-producing speeds can resuspend bottom sediments and erode shorelines, all of which can increase turbidity in the water column. Turbid waters block the penetration of sunlight to underwater plants that need light for survival, and they reduce visibility for fish that rely on sight to catch their prey. Vessel traffic can also uproot submerged aquatic vegetation which is habitat for fish and shellfish and food for waterfowl, recycles nutrients released from matter decomposing in the waterbody, and reduces wave energy at shorelines, thus protecting them from erosion. Vessel traffic might also churn up harmful chemicals that have been trapped in the sediments and might contaminate fish and shellfish that people eat. Propellers or jet drives, when in contact with the bottom, dig visible furrows across the soil and the vegetation, which can take years to recover.

BMPs that should be considered and used where appropriate:

- ☐ *Restrict boater traffic in shallow-water areas.*
- ☐ *Establish and enforce no wake zones to decrease turbidity, shore erosion, and damage in marinas.*
- ☐ *Other (describe):*

15. PUBLIC EDUCATION

Public education, outreach, and training programs should be instituted for boaters, as well as marina owners and operators, to prevent improper disposal of polluting material.

A boating public that understands the causes and effects of pollution is more likely to want clean waters and healthy aquatic environments. If they are told about the simple and effective ways that they can reduce their impact on the environment, they will usually be happy to do their part. Public education is one of the most effective ways to reduce pollution in and around marinas and from recreational boating.

BMPs that should be considered and used where appropriate:

- ☐ *Use signs to inform marina patrons of appropriate clean boating practices.*
- ☐ *Establish bulletin boards for environmental messages and idea sharing.*
- ☐ *Promote recycling and trash reduction programs.*
- ☐ *Hand out pamphlets or flyers, send newsletters, and add inserts to bill mailings with information about how recreational boaters can protect the environment and have clean boating waters.*
- ☐ *Organize and present enjoyable environmental education meetings, presentations, and demonstrations.*
- ☐ *Educate and train marina staff to do their jobs in an environmentally conscious manner and to be good role models for marina patrons.*
- ☐ *Insert language into facility contracts that ensures that tenants use certain areas and clean boating techniques when maintaining their boats. Use an environmental agreement that ensures that tenants will comply with the marina's best management practices.*
- ☐ *Have a clearly written environmental best management practices agreement for outside contractors to sign as a precondition to working on any boat in the marina.*
- ☐ *Participate with an organization that promotes clean boating practices.*
- ☐ *Provide MARPOL placards to boaters.*
- ☐ *Paint signs on storm drains indicating that anything placed in it or runoff to it drains directly to surface waters (where drainage is not to a treatment plant).*
- ☐ *Establish and educate marina patrons about rules governing fish-cleaning.*
- ☐ *Educate boaters about good fish cleaning practices.*
- ☐ *Provide information on local waste collection and recycling programs.*
- ☐ *Hold clinics on safe fueling and bilge maintenance.*
- ☐ *Teach boaters how to fuel boats to minimize fuel spills.*
- ☐ *Stock phosphate-free, nontoxic cleaners and other environmentally friendly products.*
- ☐ *Place signs in the water and label charts to alert boaters about sensitive habitat areas.*
- ☐ *Other (describe):*

Appendix B

Example
Oil Spill Response Plan

(*Note that text in* Arial *font should be replaced by facility-specific information.)*

Oil Spill Response Plan

Name of Marina

EMERGENCY RESPONSE ACTION:

Reaction

- Identify the source of the spill if possible.
- Attempt to secure the source of the spill.
- If a spill is observed at the fueling dock, immediately cease all fueling activities.
- Make a preliminary assessment as to what the spill material is and approximately how much has entered the waterway. This information will dictate what equipment needs to be deployed.
- Advise the facility manager or spill response manager if necessary.

Reporting

• U.S. Coast Guard	1-800-424-8802
• State department of environmental protection	Business hours; 24 hours

All spills that result in a slick or a sheen on the water require that the Coast Guard and state department of environmental protection be contacted and provided with pertinent information.

Note: All fuel spills, no matter how small, must be reported to the U.S. Coast Guard.

Response

Gasoline spill:

If the spill is small (5 gallons or less):

- Allow natural weathering to reduce and eliminate the spill.
- Do not allow smoking during any spill.
- Do not contain or collect gasoline because confined gasoline might create a risk of explosion and fire.

For larger spills (more than 5 gallons):

- Implement the reporting requirements.
- Secure all electricity.
- Make sure everyone is away from the affected area.
- Do not allow anyone to enter the affected area.
- Use water hoses to wash the spill away to protect docks and boats.
- Contact the fire department and harbormaster.

Other oil spills (crude and refined residual oils, diesel fuel, and kerosene):

- Contain the oil spill using a curtain boom to prevent spreading. When possible, completely surround the source.
- If the oil was spilled in an upland area, use an absorbent boom and pads to contain the material and prevent it from entering the waterbody.
- If more oil than can be contained by the boom was spilled, contact: name of primary contact for additional spill equipment.
- Once the spill is contained, use absorbent material to collect the oil. Absorbent pads can be placed within the boomed area, retrieved, wrung out, and placed back in the boomed area.
- If spreading is occurring too rapidly or other conditions prevent the containment of the oil, use the boom to deflect the oil from critical or sensitive areas.

PERSONNEL

Spill Manager

Name of person responsible for maintaining plan and equipment inventory.

Qualified Staff

List marina staff authorized to implement the spill plan.

Marina spokesperson: One person who is responsible for communicating to enforcement officials, customers, and the media. Using one person helps to ensure a consistent message.

Contact for Additional Assistance

In the event that this facility needs the services of a professional oil spill response company, contact: list the name of a professional oil spill response company with whom prior arrangements exist.

This service should be requested only by the facility manager or the spill response manager.

THREATS

Maximum Threat(s)

Overfilling of gasoline during fueling, creating explosion hazard: The most common spill occurrence will result from overfilling of gasoline and diesel fuel tanks at the fueling dock. Gasoline, because of its flammability, is the greatest threat.

Vessel spill

Under a worst-case scenario, the largest on-board fuel tank is aboard a 50-foot powerboat that carries approximately 200 gallons of diesel fuel and 20 gallons of crankcase oil. This would pose a maximum threat if this vessel was to sink within the marina perimeter.

Spill from fuel storage tank or connections to pumping station

On-site there is a ___gallon in-ground storage tank that is connected to the fuel pumping station by a series of flexible and rigid hoses. A fuel spill could result from the failure of one of the connections. A spill could also result when the fuel tank is being filled.

Minimum Threats

Spill from waste oil receptacle: On site there is a 200-gallon waste oil receptacle. It is located 100 yards from the coastal edge and is surrounded by an impervious berm designed to retain 110 percent of the receptacle's volume.

SPILL RESPONSE EQUIPMENT

Available On-site Resources

(1) 150-foot harbor curtain boom (3 times the length of the vessel with the largest fuel tank)

Operational characteristics: deflects and contains oil in the water. Curtain boom is susceptible to wind, waves, and current. These factors can cause oil to escape over the top and under the bottom of the boom.

Deployment: Can be attached to a fixed structure or to an anchor. Place downstream of oil spill. If surface current is moving greater than 0.7 knot, the boom will not contain oil acting at a right angle to it. The boom angle will need to be adjusted to decreasing angles as the speed of the current increases.

Disposal: The boom, if maintained properly, can be used multiple times. The average life span for the boom is approximately 5 to 10 years, depending on the use it receives.

Maintenance: Rinse thoroughly with fresh water. Be sure to collect with absorbents any remaining oil on the boom. Store out of sunlight in a manner that allows quick deployment.

(2) 80 feet of 5-inch absorbent boom (37.5 ft^3; 84 lb)

Operational characteristics: Boom has little inherent strength and might need extra flotation to keep from sinking when laden with oil.

(3) 200 individual absorbent pads (3/8 in. x 18 in. x 18 in.)

Operational characteristics: Use absorbents only in low current velocity situations.

Deployment: Place absorbents on spilled oil. Recovery efficiency decreases rapidly once outer layer is oil-soaked.

Disposal: May be wrung out and reused. (See manufacturer's specifications.) At the end of the useful life, wring out and store in a sealed container. The container will be disposed of by a contracted waste hauler.

Maintenance: When possible, wring out and dry after use. (See manufacturer's specifications.) Otherwise, material will be disposed of properly.

(4) Empty 55-gallon drum with lid for storage of collected oil

(5) Gloves

(6) Pitchfork

(7) Two 15-lb Danforth anchors

(8) Mooring lines

(9) Standard mop or laundry wringer

Location

The spill response equipment is stored in the spill response shed located adjacent to the maintenance shed. Key number 000, which the manager holds on the master ring, opens the spill response shed.

Additional Equipment

If the rapid deployment of additional resources is necessary, we have secured permission to use equipment from: List local sources of equipment and how they can be reached, e.g., neighboring marina, they can be reached on VHF CH 68 or by calling 555-0000.

Coast Guard oil spill response trailer is also available as a first-aid measure.

NOTES

Do not use dispersants on oil/fuel spills. Dispersants include products manufactured specifically for that purpose and more common products such as detergent. Using them simply forces the oil into the water column, where it might be more harmful. Dispersants may be used only with the approval of the Coast Guard federal on-scene coordinator.

On the downstream side of the marina is a salt marsh that should be protected from a large oil spill. A floating oil boom should be used to deflect spilled oil away from this critical area.

This response plan will be tested twice a year, with a least one test occurring at the beginning of the boating season. All of the spill response equipment will be inspected at the time of the tests.

RECORDS

Staff Readiness Drills

Date	Drill Simulation	Who participated	Supervisor
date	Sinking vessel	List of staff members who participated	Signature

Inspection

Date	Inspected by:	Condition/Notes
date	Name	Notes on equipment condition

Emergency Phone List

- United States Coast Guard, Marine Safety Office: (###) ### - ####
- State Department of Environmental Management: (###) ### - ####
- Local Harbormaster Department: (###) ### - ####
- Local Police Department: (###) ### - ####
- Local Fire Department: (###) ### - ####

Plan last updated: date

Updated by: name

Appendix C

Table of Costs and Benefits of Marina Best Management Practices

(*Originally published in USEPA, 1996: Clean Marinas—Clear Value*)

Appendix C: Costs and Benefits of Clean Marina Examples (Source: USEPA, 1996)

Environmental change(s)	Initial investment	Years to amortize	Annualized cost of investment	Change in annual operations costs	Change in annual revenue	1995 net benefits from environmental change	Notes
1. Trash recycling - All Season's Marina, NJ	$5,000	10	$648	($4,100)	$0	$3,452	Net benefit is estimated by avoided trash removal cost less estimated labor costs for recycling.
2. Closed-loop hull-blasting system with reused plastic blasting medium - Associated Marine Technologies, FL	$25,849	5	$5,971	$8,617	$58,173	$43,585	Income from entire hull-blasting operation; difference in costs and revenues from conventional system revenues unknown; system installation required by county to continue service.
3. Pumpout service used as staff incentive - Battery Park Marina, OH	$2,450	10	$317	$20	$12,500	$12,163	Improved staff morale and productivity.
4. Sewage meter for pumpout station and entire marina - Brewer's Cove Haven Marina, RI	$6,800	10	$881	($2,603)	$0	$1,722	Savings from metered sewage flow; federal and state grants paid for installation of meter; however, initial cost included here to demonstrate benefits even with full cost.
5. Public education and free recycling - Cap Sante Boat Haven, WA	$0	N/A	$0	($10,800)	$0	$10,800	Waste disposal savings, less the cost of renting recycle bins.
6. Habitat assessment and scallop farming under docks - Cedar Island Marina, CT	$0	20	$0	$33,500	$46,000	$12,500	Cost of docks no more than conventional docks; operations costs are biologists' salaries; cost savings from extended dredging season; in addition to net benefits, $5,000 of annual "free publicity" is attributed to improvements.
7. Inland boatyard and repair sites - Conanicut Marine Services, RI	($1,807,000)	20/10	($138,688)	($72,125)	$75,000	$285,813	Initial land savings on buying inland versus waterfront, including permit saving; land amortized over 20 yr, trailer over 10 yr; property tax and land value savings are estimated to demonstrate benefit of inland yard.
8. Overall changes: pumpout service, dustless sanders, grounds maintenance - Deep River Marina, CT	$21,000	10/5	$3,329	$13,000	$86,800	$70,471	Additional benefits from new slip rentals, winter storage, added fuel sales; additional value was realized from "free publicity"; pumpout amortized over 10 yr, sanders over 5 yr.
9. Overall changes: environmental contract, pumpout service, solid waste and liquid materials management - Edwards Boatyard, MA	$116,400	20/10	$9,459	$18,100	$100,000	$72,441	Pumpout cost amortized over 10 yr, other investments over 20 yr; also attributed the equivalent of $10,000 of "free publicity."
10. Overall changes: habitat creation, pollution control, water conservation, etc. - Elliot Bay Marina, WA	N/A	1	N/A	($3,620)	$0	$3,620	Savings from avoided hazardous waste pickup paid for labor time; dog waste bags, distributed free to customers, save labor costs.
11. Overall changes: wash water recycling, trash recycling, portable pumpout station - Green Cove Marina, NJ	$6,800	10	$881	($750)	$28,700	$28,569	Change in costs are added labor and service costs less savings from decrease in disposal services; initial outlay for portable pumpout and recycling setup less permit savings; pumpout partially paid for with state grant but full initial cost included here to demonstrate benefits even with the full cost.
12. Pumpout capabilities at every dock - Hall of Fame Marina, FL	$16,200	10	$2,098	$3,788	$300,000	$294,114	Increased revenue due to special dockside pumpout service.

Appendix C: Costs and Benefits of Clean Marina Examples (Source: USEPA, 1996)

Environmental change(s)	Initial investment	Years to amortize	Annualized cost of investment	Change in annual operations costs	Change in annual revenue	1995 net benefits from environmental change	Notes
13. Seaweed recycled as garden fertilizer and mulch - The Hammond Marina, IN	$0	N/A	$0	($800)	$0	$800	Expected to save $17,500 on weed control in 1996.
14. Filtration of pressure wash water - Harbour Towne Marina, FL	$46,415	10	$6,011	$24,000	$270,000	$239,989	Difference in revenues and costs compared to conventional system unknown; system installation required by county to continue service.
15. Full-service pumpout and fueling - Kean's Detroit Yacht Harbor, MI	$12,000	10	$1,554	$1,040	$11,000	$8,406	New revenue from dockside pumpout and fuel services.
16. Recycled crushed concrete controls runoff - Lockwood Boat Works, NJ	($360,000)	20	($28,888)	$0	$0	$28,888	Initial investment is negative because of savings of using recycled concrete surfacing rather than blacktop.
17. Dustless vacuum sanding - The Lodge of Four Seasons Marina, MO	$3,724	5	$860	$8,643	$20,000	$10,497	Net of initial outlay and estimated labor and materials cost; saved 30% of conventional costs; difference in revenues unknown.
18. Floating pumpout and restroom barge to serve transients - Oak Harbor Marina, WA	$0	N/A	$0	($5,230)	$0	$5,230	State grant funded $58,600 cost of pumpout barge. The city hauls the marina's septic waste for free, which saved an equivalent of $8,220 in septic hauling cost.
19. Outdoor boat repairs done over screen tarps - Port Annapolis Marina, MD	$2,000	1	$2,000	($2,000)	$2,000	$2,000	Savings on cleanup costs, less the cost of labor and screen tarps.
20. Opening in breakwater to improve flushing - Puerto del Rey Marina, PR	$30,000	20	$2,407	$0	$50,000	$47,593	Additional dock rental income attributed to better water quality.
21. Wash water recycled without chemicals - Summerfield Boat Works, FL	$30,075	10	$3,895	$3,300	$93,750	$86,555	Savings in water cost.
22. Used oil burner installed to heat boat repair building - West Access Marina, IL	$7,000	10	$907	($9,894)	$9,495	$18,482	Cost savings on disposal and energy, less annual maintenance costs, plus additional boat repair income.
23. Floating personal watercraft (PWC) fueling dock prevents spillage - Winter Yacht Basin, NJ	$3,138	10	$406	$400	$6,366	$5,560	Additional personal watercraft fuel sales business.
24. Environmental changes at boatyard chain - Brewer Yacht Yards; NY, CT, RI, MA, ME	N/A	N/A	N/A	N/A	N/A	+	No calculations because chain-wide efforts made it difficult to attribute benefits to any one particular change; owners, however, felt strongly that chain-wide improvements made good business sense.
25. Environmental changes at marina chain - Westrec Marinas, Inc.; national	N/A	N/A	N/A	N/A	N/A	+	

Appendix D

Federal Laws Related to Marinas and Recreational Boating

Table D. Federal Laws Related to Marinas and Recreational Boating

Activity	Permit, License or Title	Authority	Purpose	Requirements
Any construction activity that disturbs 1 or more acres	NPDES Storm water Permit for Construction Activity	Clean Water Act, Section 402, for storm water discharge permits and 40 CFR 122.26	Maintains after development, as nearly as possible, the predevelopment runoff conditions.	All projects that disturb 1 or more acres must submit a Notice of Intent
Discharge of boat and equipment wash water, storm water runoff from boat maintenance areas, noncontact cooling water, and condensate discharges	NPDES General Permit for Discharges from Marinas	Clean Water Act, Section 402, for storm water discharge permits and 40 CFR 122.26	Controls pollution generated from runoff associated with industrial activity.	Any marina or boat yard that conducts boat maintenance activities, including washing, and has wastewater or storm water discharges must apply for coverage under this permit unless they have a valid individual discharge permit or coverage under 97-SW(1). To receive coverage under this permit, applicants must develop and implement a storm water pollution prevention plan
Operate a paint spray booth	Air Quality Permit to Construct	Clean Air Act, Section 110, and Title V, 42 U.S.C. 7401 et seq.	Ensures that any new, modified, replaced, or relocated source of air pollution complies with all air quality requirements. Air quality standards have been adopted to protect public health, vegetation, and forests.	Pre-Approval: Before an air pollution source is constructed or modified, a permit must be obtained from the state environmental agency. Post-Approval: Periodic emission tests and /or reports may be required depending on the nature of the operation and its emissions.
Any of the following activities in a nontidal wetland or its buffer: grading or filling; excavating or dredging; changing existing draining patterns; disturbing the water level or water table; and destroying or removing vegetation.	Proposed Activities in Nontidal Wetlands (Nontidal Wetlands and Waterways Permits)	Rivers and Harbors Act of 1899, Section 10; Clean Water Act, Section 404 Section 10 of the Rivers and Harbors Act of 1899 gives the Army Corps of Engineers authority to regulate all work and structures in navigable waters of the U.S. Section 404 of CWA regulates discharges of dredged or fill material into navigable waters, including wetlands. If USACE Section 404 permit is required, the state must investigate the site prior to construction.	Prevents, wherever possible, further degradation and losses of nontidal wetlands due to human activity; and wherever practical and feasible, to offset unavoidable losses or degradations through the deliberate restoration or creation of nontidal wetlands.	Wetland mitigation construction or monitoring requirements may be required in many instances and may extend well beyond construction of an approved mitigation project.
Discharge of sewage and grey water from a marina's private sewage treatment plant to surface water	Surface Water Discharge Permit	Clean Water Act	Maintains water quality standards in the water receiving the discharge.	Must be included in county water and sewer plan. Must meet all effluent limits, monitoring requirements, and other permit conditions

Table D. Federal Laws Related to Marinas and Recreational Boating (cont.)

Activity	Permit, License or Title	Authority	Purpose	Requirements
Apply antifoulant paints containing tributyl tin (TBT)	TBT Applicators License	Organotin Antifoulant Paint Control Act of 1988 (33 U.S.C. 2401) EPA is required to certify that each antifouling paint containing organotin does not release more than 4.0 micrograms per square centimeter per day.	Prohibits the use of antifouling paints containing organotin (TBT) on vessels that are 25 meters or less in length, unless the vessel hull is aluminum. .	It is unlawful for any person other than an owner or agent of a commercial boatyard to possess, distribute, sell, offer for sale, use, or offer for use any paint containing a TBT compound (except for spray can less than or equal to 16 ounces).
Generate 100 kg of hazardous waste in a calendar month or accumulate this amount at any one time	Notification of Hazardous Waste; EPA Identification Number for Generators, Transporters, and Treatment/Storage/ Disposal (TSD) Facilities	RCRA, Section 3010; 40 CFR 262.12, 263.11, and 264.11	Ensures proper storage and disposal of hazardous wastes.	A generator may not treat, store, dispose of, transport, or offer for transportation hazardous waste without having received an EPA Identification Number. A generator may not offer hazardous waste to transporters or to a TSD facility that has not received an EPA Identification Number.
Construction where the habitat of an endangered species or the species itself could be affected	N/A	Federal Endangered Species Act, (16 U.S.C. 1531-1543; P.L. 93-205) National Marine Fisheries Service (NMFS) regulations concerning ESA listing procedure are published at 50 CFR Parts 217-227. Joint regulations (USFWS and NMFS) - 50 CFR Parts 402 and 424-453. FWS coordinates ESA activities for terrestrial and freshwater species, while NMFS is responsible for marine species and Pacific salmon.	Provides conservation of species which are in danger of extinction throughout all or a significant portion of their range. All proposed development sites must be assessed by USFWS and USDOC for endangered and threatened species and habitat protection areas.	A species must be listed if it is threatened or endangered - because of present or threatened destruction, modification, or curtailment of its habitat or range - overutilization for commercial, recreational, scientific, or educational purposes - disease or predation - inadequacy of existing regulatory mechanisms - other natural or manmade factors affecting its continued existence.
Fueling, bilge water discharge, oil changing	N/A	Clean Water Act	Prohibits discharge of oil or oily waste into or upon the navigable waters of the U.S.	Prohibits discharge of oil or oily waste into or upon the navigable waters of the U.S. or the waters of the contiguous zone if such discharge causes a film or sheen upon, or discoloration of, the surface of the water, or causes a sludge or emulsion beneath the surface of the water.
Boat cleaning	N/A	Clean Water Act, (33 CFR 153.305)	Prohibits the use of soaps or other dispensing agents.	Prohibits the use of soaps or other dispensing agents to dissipate oil on the water or in the bilge without the permission of the Coast Guard.

Table D. Federal Laws Related to Marinas and Recreational Boating (cont.)

Activity	Permit, License or Title	Authority	Purpose	Requirements
Fueling, liquid material management	Spill Prevention, Contaminant, and Countermeasure (SPCC) Plan	EPA, Oil Pollution Prevention Regulation 40 CFR Part 112	Develops and implements plan to prevent discharge of oil into or upon navigable waters of the U.S. or adjoining shorelines.	Requires that marinas prepare and implement a plan to prevent any discharge of oil into navigable waters or adjoining shorelines if the facility has: - an above-ground oil capacity storage > 660 gal in a single container - an aggregate above-ground storage capacity of > 1,320 gal or a total underground storage capacity of > 42,000 gal.
Pumpouts, sewage discharge	N/A	Clean Vessel Act of 1992, Subtitle (V)(F) of P.L. 102-587 The Clean Vessel Act is a cost-reimbursable program, i.e., the grantees must spend their money to conduct approved activities and then request reimbursement for up to 75% of the costs. Grantee must provide at least 25% of project funding from a non-federal source.	Allows the Secretary of Interior to issue grants to coastal and inland states for pumpout stations and waste reception facilities to dispose of recreational boater sewage.	Directs the Secretary of Interior to provide grants to states to pay for the construction, renovation, operation, and maintenance of pumpout stations and waste reception facilities; requires each coastal state to conduct a survey to determine the number and location of all operational pumpout facilities and the number of recreational vessels with MSD Type III or portable toilets; requires each coastal state to develop and submit a plan for the construction and/or renovation of an adequate number of pumpout stations and waste reception facilities within the coastal zone of the state.
Pumpouts, boat toilet use, sewage discharge	Marine Sanitation Device Standard	Clean Water Act, Section 312, U.S.C., Title 33, Section 1322, 40 CFR Part 140 The Water Quality Act of 1987 requires EPA to develop standards designed to prevent the discharge of untreated or inadequately treated sewage into the U.S. waters. Section 312 requires the U.S. Coast Guard (USCG) to promulgate and enforce regulations governing the design, construction, installation, and operation of MSDs.	Eliminates discharge of untreated sewage from vessels into the U.S. waters, including the territorial seas (within 3 miles of the coast). It is illegal to discharge raw sewage in U.S. territorial waters.	Requires the installation of a U.S. Coast Guard certified MSD Type I, Type II, or Type III on all vessels with installed toilet systems operating in the navigable waters of the U.S. Portable toilets are not considered installed toilets; however, direct overboard discharge of portable toilet wastes is a violation of state water quality regulations.
Sewage discharge	Marine Sanitation Device Standard, Complete Prohibition, No Discharge	Clean Water Act, Section 312 (f) (3), U.S.C. Title 33, Section 1322, 40 CFR, Part 140.4 The EPA may allow a state to prohibit all discharges from marine toilets, thus declaring the area a “No Discharge Zone”	Eliminates discharge of untreated sewage from vessels into the U.S. waters, including the territorial seas (up to 3 miles).	Part 140.4 indicates that a state may completely prohibit the discharge from all vessels of any sewage, whether treated or not, into some or all of the waters within such state by making a written application to the EPA Administrator and by receiving the Administrator’s affirmative determination pursuant to Section 312(f)(3) of the Act.

Table D. Federal Laws Related to Marinas and Recreational Boating (cont.)

Activity	Permit, License or Title	Authority	Purpose	Requirements
MSD design	Marine Sanitation Devices; General, Certification Procedures, Design, Construction, and Testing	Clean Water Act, Section 312, U.S.C. Title 33, Section 1322, 40 CFR Part 159 The U.S. Coast Guard will maintain and make available a list that identifies certified MSDs.	Prescribes regulations governing the design and construction of marine sanitation devices and procedures for certifying that the MSDs meet the regulations and the standards of EPA promulgated under Section 312.	Section 159.7 (a) addresses requirements for vessel operators. It states that no person may operate any vessel equipped with installed toilet facilities unless it is equipped with: - an operable Type II or III device that has a label on it under Sec. 159.12 or Sec. 159.12a; or - an operable Type I device that has a label on it under Sec. 159.16 or that is certified under Sec. 159.12, if the vessel is 65 feet or less in length.
Sewage discharge	Marine Sanitation Device Standard, Establishment of Drinking Water Intake No Discharge Zone	Clean Water Act, Section 312 (f) (4) (B), U.S.C. Title 33, Section 1322, 40 CFR Part 140	Eliminates discharge of untreated sewage from vessels into the U.S. waters, including the territorial seas (up to 3 miles). The discharge of sewage from a vessel, whether treated or untreated, is prohibited in No Discharge Zones.	Section 312 (f)(4)(B) provides that "Upon application by a State, the EPA Administrator shall, by regulation, establish a drinking water intake zone in any waters within such State and prohibit the discharge of sewage from vessels within that zone."
Oil discharges from boats	N/A	Oil Pollution Act of 1990 (OPA), Public Law 101-380 (33 U.S.C. 2701 et seq; 104 Stat. 484) OPA requires FWS consultation on developing a fish and wildlife response plan for the National Contingency Plan, input to Area Contingency Plans, review of Facility and Tank Vessel Contingency Plans, and conducting of damage assessments associated with oil spills.	Establishes new requirements and amended the Federal Water Pollution Control Act to provide enhanced capabilities for oil spill response and natural resource damage assessment by the FWS. Addresses commercial oil shipping (e.g., tankers must be double-hulled, captains may lose their license if operating vessel under the influence of drugs or alcohol).	Some requirements are applicable to recreational boating. The responsible party for any vessel or facility that discharges oil is liable for the removal costs of the oil and any damages to natural resources; real or personal property; subsistence uses; revenues, profits, and earning capacity; and public services such as providing increased or additional public services.

Table D. Federal Laws Related to Marinas and Recreational Boating (cont.)

Activity	Permit, License or Title	Authority	Purpose	Requirements
Garbage dumping at sea	Chapter 33: Prevention of Pollution from Ships	Marine Plastic Pollution Research and Control Act,1987, MPPRCA (Title II of P.L. 100-220), U.S.C. Title 33, Chapter 33 MPPRCA is the U.S. Law implementing MARPOL Annex V, an international pollution prevention treaty. The U.S. Coast Guard is primarily responsible for enforcement of the law and development of the regulations.	Restrict garbage dumping at sea. Applies to all domestic and international ships operating in the U.S. Exclusive Economic Zone (EEZ) and in U.S. navigable waters.	Prohibits ocean dumping of plastics by ships and restricts the ocean dumping of other types of garbage within 25 miles from any land. Requires ports and terminals to provide garbage reception facilities. It is prohibited to discharge garbage in inland waters or in the ocean within 3 nautical miles of shore. A placard which notifies the crew and passengers of the MARPOL Annex V is required on vessels 26 feet and over. A plan and logbook are required on vessels 40 feet and over.
Ocean Dumping; research	N/A	Marine Protection Research and Sanctuaries Act of 1972, 33 U.S.C. 1441-1445; Title II of P.L. 92-532, as amended	Authorizes research and monitoring related to ocean dumping as well as research on possible effects of pollution, overfishing, and human-induced changes of the ocean system.	Provides for long-range research on the effects of human-induced changes to the marine environment and authorizes research and demonstration activities related to phasing out sewage and industrial waste dumping in marine environment.

Appendix E

Web Sites with Information Related to Marinas and Recreational Boating

SOME WEBSITES TO VISIT

U.S. Environmental Protection Agency, Office of Wetlands, Oceans, and Watersheds

http://www.epa.gov/owow/

Information on the control of nonpoint source pollution, the condition of the water-related environment, and the management and restoration of watersheds.

U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response

http://www.epa.gov/swerrims/

Provides policy, guidance, and direction for the land disposal of hazardous wastes, underground storage tanks, solid waste management, encouragement of innovative technologies, source reduction of wastes, and the Superfund Program.

U.S. Environmental Protection Agency,Office of Wetlands, Oceans, and Watersheds Publications On Line

http://www.epa.gov/OWOW/info/PubList/publist4.html

http://earth1.epa.gov/OWOW/info/NewsNotes/

A variety of EPA publications related to Nonpoint Source Pollution that can be ordered or read on the Internet.

U.S. Environmental Protection Agency, Office of Wetlands, Oceans, and Watersheds Publications On Line

http://www.epa.gov/OWOW/info/PubList/publist4.html

http://earth1.epa.gov/OWOW/info/NewsNotes/

A variety of EPA publications related to Nonpoint Source Pollution that can be ordered or read on the Internet.

U.S. Environmental Protection Agency, Index of Watershed Indicators

http://www.epa.gov/surf/iwi

Maps and information about watersheds nationwide. Locate your own watershed and learn about the quality of the waters in it, sources of pollution, and organizations active in protecting it.

U.S. Coast Guard Kids' Corner

http://www.uscg.mil/hq/g-cp/kids/kidindx.html

Activities and information for kids about safety and clean boating practices; "The Adventures of Captain Cleanwater: An Activity Book for Kids About Clean and Safe Boating" and "The True Story of Inky the Whale."

National Sea Grant National Depository

http://nsgd.gso.uri.edu

Searchable archive of all Sea Grant-funded documents since 1967, including hundreds of studies on boating, marinas, and the environment, plus many educational flyers, brochures, and fact sheets; well worth the visit.

National Sea Grant College Program

http://www.mdsg.umd.edu/NSGO/

Information about the National Sea Grant program and links to state Sea Grant programs nationwide.

U.S. Fish and Wildlife Service, Clean Vessel Act Program

http://fa.r9.fws.gov/cva/cva.html

Information on the CVA program, which provides grants for pumpout and dump stations for boaters to dispose of human waste in an environmentally safe manner.

Tennessee Valley Authority

http://www.tva.gov/river/recreation/index.htm

Information on the camping and recreation areas operated by the TVA. TVA operates some 100 public recreation areas throughout the Tennessee Valley, including campgrounds, day-use areas, and boat launching ramps. Their opening and closing dates are listed at this site, as well as contact numbers.

U.S. Army Corps of Engineers

http://www.usace.army.mil/inet/functions/cw/cecwo/recrea.htm

Information about all of the lakeside parks that are administered by the Army Corps of Engineers. The Lakeside Recreation Resource page shows a map. Just click on an area of the country that you are interested in and the maps will show you all the information you need about the USACE park system.

Canadian Coast Guard

http://www.pacific.ccg-gcc.gc.ca/Epages/offboat/pae/pme.htm

Protecting the Aquatic Environment: A Boater's Guide with valuable information on managing waste, boat maintenance, antifouling paint, batteries, introduced species, tips for protecting the aquatic environment, spill reporting, and more.

Florida Department of Environmental Protection

http://www.dep.state.fl.us

Information and management practices for managing the following types of waste:
- Distress signal flares
- Batteries (lead acid marine/auto and rechargeable)
- Mercury-containing devices: bilge pump float switches, air conditioning thermostats
- Mercury containing lamps: fluor-escent and high-intensity discharge
- Refrigerants and asbestos.

Maryland Department of Natural Resources

http://www.dnr.state.md.us/boating/

Links to a variety of pages with information of interest to boaters, including:
- Boating Regulations
- Boating Safety
- Clean Marina Initiative
- Public Boating Facilities
- Pumpout Program
- Vessel Requirements
- Weather.

National Safe Boating Council

http://www.safeboatingcouncil.org/

The mission of the NSBC is to provide a forum for advancing and fostering safe boating, and for educating the public in safe boating principles, by developing and facilitating an ongoing series of campaigns to promote safe boating principles and practices; facilitating the distribution and dissemination of information on safe boating; promoting the development of research initiatives to support boating education and safety awareness; improving the professional development of boating safety educators; and encouraging the development and implementation of outstanding boating safety programs.

Marina Operators Association of America (MOAA)

http://www.nmma.org/affiliates/usa/moaa

MOAA works for the enhancement of the recreational marina industry through:
- Stimulating a continuing exchange of ideas
- Updating marina operators on new information
- Banding together to maintain a strong national voice
- Encouraging marina operators to institute the best management practices
- Joining to establish a clean marina program
- Encouraging marina operators to be proactive in their customer's boating experience.

National Marine Manufacturers Association

http://www.nmma.org

NMMA members—more than 1,600 companies—produce every conceivable product used by recreational boaters. NMMA provides a wide variety of programs and services tailored to member needs: technical expertise, standards monitoring, government relations avocation, industry statistics, and more. NMMA produces boat shows, including the world's largest marine trade show, the International Marine Trades Exhibit & Convention (IMTEC), in key North American markets.

International Marina Institute

http://www.imimarina.com

IMI is a nonprofit membership organization serving the global marine industry. It offers management training, education, and information about research, legislation, and environmental issues affecting the marina industry. IMI is a marine trade organization that encompasses all segments of the marina business both nationally and internationally.

Marine Environmental Education Foundation

http://www.meef.org

MEEF is a national, nonprofit, tax-exempt, charitable foundation founded to bring together national specialists to develop education programs and research on marine environmental issues. Its goal is to create and present educational programs that will result in cleaner waters for the boating public. MEEF is the creator and sponsor of the National Clean Boating Campaign.

National Boating Federation

http://outdoorsource.com/nbf

The largest nationwide alliance of recreational boating organizations, yacht and boating clubs, and individual members focused on promoting recreational boating activities. The National Boating Federation often appears before congressional committees to testify on boating matters.

Boat Owners Association of the United States

http://www.boatus.com

Provides services including representing the interests of boat owners on Capitol Hill; insuring members' boats; operating an on-the-water towing network; and providing discount boating equipment through the Internet, mail order, and marine centers. BoatU.S. publishes widely circulated publications for boaters, serves as an educator in marine safety and environmental issues, and routinely tests and reports on boating safety equipment and other products.

Marine Retailers Association of America

http://www.mraa.com

MRAA is the nation's largest marine retailers trade association, representing an industry with more than 100,000 employees and nearly $20 billion in sales annually. The mission of the MRAA—Progress through Participation with Industry Partners—is accomplished by promoting programs and services and helping create an environment that helps marine retailers to operate. MRAA promotes and furthers the interests of all its member companies and the marine industry in general.

Center for Marine Conservation

http://www.cmc-ocean.org

The Center for Marine Conservation is committed to protecting ocean environments and conserving the global abundance and diversity of marine life. Through science-based advocacy, research, and public education, CMC promotes informed citizen participation to reverse the degradation of our oceans.

BoatFacts Online

http://www.boatfacts.com/home.asp

Information on boating products, publications, marinas, classifieds, engines, boats, legislative issues, organizations, discussion forums, and a boating calendar.

Appendix F

Storm Water Runoff Management Practice Tables

Table F-1. Advantages and disadvantages of management practices (MDE, 2000).

Management Practice	Advantages	Disadvantages	Comparative Cost[a]
Runoff control ponds			
Wet pond	• Can provide peak flow control • Can serve large developments; most cost-effective for larger, more intensively developed sites • Enhances aesthetics and provides recreational benefits • Little ground water discharge • Permanent pool in wet ponds helps to prevent scour and resuspension of sediments • Provides moderate to high removal of both particulate and soluble urban runoff pollutants	• Not economical for drainage area less than 10 acres • Potential safety hazards if not properly maintained • If not adequately maintained, can be an eyesore, breed mosquitoes, and create undesirable odors • Requires considerable space, which limits use in densely urbanized areas with expensive land and property values • Not suitable for hydrologic soil groups “A” and “B” (USDA-NRCS classification) unless a liner is used • With possible thermal discharge and oxygen depletion, may severely impact downstream aquatic life	Moderate to high compared to conventional runoff detention
Infiltration practices			
Infiltration basin	• Provides ground water recharge • Can serve large developments • High removal capability for particulate pollutants and moderate removal for soluble pollutants • When basin works, it can replicate predevelopment hydrology more closely than other BMP options • Basins provide more habitat value than other infiltration systems	• Possible risk of contaminating ground water • Only feasible where soil is permeable and there is sufficient depth to rock and water table • Fairly high failure rate • If not adequately maintained, can be and eyesore, breed mosquitoes, and create undesirable odors • Regular maintenance activities cannot prevent rapid clogging of infiltration basin	Construction cost moderate but rehabilitation cost high
Infiltration trench	• Provides ground water recharge • Can serve small drainage areas • Can fit into medians, perimeters, and other unused areas of a development site • Helps replicate predevelopment hydrology, increases dry weather baseflow, and reduces bankfull flooding frequency	• Possible risk of contaminating ground water • Only feasible where soil is permeable and there is sufficient depth to rock and water table • Since not as visible as other BMPs, less likely to be maintained by residents • Requires significant maintenance	Cost-effective on smaller sites Rehabilitation costs can be considerable
Porous pavement	• Provides ground water recharge • Provides water quality control without additional consumption of land • Can provide peak flow control • High removal rates for sediment, nutrients, organic matter, and trace metals • When operating properly can replicate predevelopment hydrology • Eliminates the need for runoff drainage, conveyance, and treatment systems off-site	• Requires regular maintenance • Possible risk of contaminating ground water • Only feasible where soil is permeable, there is sufficient depth to rock and water table, and there are gentle slopes • Not suitable for areas with high traffic volume • Need extensive feasibility tests, inspections, and very high level of construction workmanship (Schueler, 1987) • High failure rate due to clogging • Not suitable to serve large off-site pervious areas	Cost-effective compared to conventional asphalt when working properly
Concrete grid pavement	• Can provide peak flow control • Provides ground water recharge • Provides water quality control without additional consumption of land	• Requires regular maintenance • Not suitable for areas with high traffic volume • Possible risk of contaminating ground water • Only feasible where soil is permeable, there is sufficient depth to rock and water table, and there are gentle slopes	Information not available

Table F-1. (cont.)

Management Practice	Advantages	Disadvantages	Comparative Cost[a]
Filtering practices			
Filtration basin	• Ability to accommodate medium-size development (3-80 acres) • Flexibility to provide or not provide ground water recharge • Can provide peak volume control	• Requires pretreatment of stormwater through sedimentation to prevent filter media from prematurely clogging	Information not available
Open channel practices			
Grassed swale	• Requires minimal land area • Can be used as part of the runoff conveyance system to provide pretreatment • Can provide sufficient runoff control to replace curb and gutter in single-family residential subdivisions and on highway medians • Economical	• Low pollutant removal rates • Leaching from culverts and fertilized lawns may actually increase the presence of trace metals and nutrients	Low compared to curb and gutter
Structural management practices that do not fully meet the 80% TSS requirement			
Vegetated filter strip	• Low maintenance requirements • Can be used as part of the runoff conveyance system to provide pretreatment • Can effectively reduce particulate pollutant levels in areas where runoff velocity is low to moderate • Provides excellent urban wildlife habitat • Economical	• Often concentrates water, which significantly reduces effectiveness • Ability to remove soluble pollutants highly variable • Limited feasibility in highly urbanized areas where runoff velocities are high and flow is concentrated • Requires periodic repair, regrading, and sediment removal to prevent channelization	Low
Water quality inlet: catch basin with sand filter	• Provide high removal efficiencies of particulates • Require minimal land area • Flexibility to retrofit existing small drainage areas • Higher removal of nutrient as compared to catch basins and oil/grit separator	• Not feasible for drainage areas greater than 5 acres • Only feasible for areas that are stabilized and highly impervious • Not effective as water quality control for intense storms	Information not available
Water quality inlet: oil/grit separator	• Captures coarse-grained sediments and some hydrocarbons • Requires minimal land area • Flexibility to retrofit existing small drainage areas and applicable to most urban areas • Shows some capacity to trap trash, debris, and other floatables • Can be adapted to all regions of the country	• Not feasible for drainage area greater than 1 acre • Minimal nutrient and organic matter removal • Not effective as water quality control for intense storms • Concern exists for the pollutant toxicity of trapped residuals • Require high maintenance	High, compared to trenches and sand filters
Extended detention dry pond with micropool	• Can provide peak flow control • Possible to provide good particulate removal • Can serve large development • Requires less capital cost and land area when compared to wet pond • Does not generally release water or anoxic water downstream • Provides excellent protection for downstream channel erosion • Can create valuable wetland and meadow habitat when properly landscaped	• Removal rates for soluble pollutants are quite low • Not economical for drainage area less than 10 acres • If not adequately maintained, can be an eyesore, breed mosquitoes, and create undesirable odors	Lowest cost alternative in size range

[a]Comparative cost information from Schueler, 1992

Table F-2. Costs of selected management practices (Claytor and Scheuler, 1996; Brown and Schueler, 1997).

Management practice	Construction costs[a]	Useful life (years)	Total annual costs
Infiltration basin[b]			
Average	$0.55/ft^3 storage	25[c]	–
Report range	$0.22–$1.31/ft^3	–	$0.03–$0.05/ft
Probable range	$0.44–$0.76/ft^3	–	–
Infiltration trench[b]			
Average	$4.36/ft^3 storage	10[c]	–
Report range	$0.98–$10.04/ft^3	–	$0.03–$0.10/ft
Probable range	$2.73–$8.18/ft^3	–	–
Infiltration practices[d]			
Average	$2.99/ft^3 storage	–	–
Report range	$2.13-4.27/ft^3 storage	–	–
Vegetated swales[b]			
Established from seed			
Average	$7.09/linear ft	50[e]	$1.09/linear ft
Report range	$4.91–$9.27/linear ft	–	–
Established from sod			
Average	$21.82/linear ft	50[e]	$2.18/linear ft
Report range	$8.73–$54.56/linear ft	–	–
Porous pavement[b]			
Average	$1.64/ft^2	10[f]	$0.16/ft
Report range	$1.09-$2.18/ft^2	–	–
Concrete grid pavement[b]			
Average	$1.09/ft^2	20	$0.05/ft
Report range	$1.09–$2.18/ft^2	–	–
Filtration basins[b]			
Average (probable)	$5.46/ft^3 storage	25[g]	–
Report range	$1.09–12.00/ft^3	–	$0.11–$0.87/ft
Probable range	$2.18–9.82/ft^3	–	–
Filtration practices[d]			
Average	$2.63/ft^3 storage	–	–
Range	$2.13-6.40/ft^3 storage	–	–
Water quality inlet[b,h]			
Average	$2,182 each	–	$164 each
Report range	$1,200–3,273 each	–	–
Probable range	–		–
Water quality inlet with sand filter[b,h]			
Average (probable)	$10,900/drainage acre	50	$764/drainage acre
Oil/grit separator[b,h]			
Average	$19,640/drainage acre	50	$1,091/drainage acre
Report range	$16,370–$21,820/ drainage acre	–	–

Table F-2. (cont.)

Management practice	Construction costs[a]	Useful life (years)	Total annual costs
Stabilization with ground cover[b,h]			
From existing vegetation	$0	50	Natural: $109/acre
Average	–	–	Managed: $873/acre
Report range			
From seed	$436/acre	50	Natural: $131/acre
Average	$218–$1,091/acre	–	Managed: $900/acre
Report range			
From seed and mulch	$1,637/acre	50	Natural: $218/acre
Average	$872–$3,819/acre	–	Managed: $982/acre
Report range			
From sod	$12,330/acre	50	Natural: $764/acre
Average	$4,910–$52,375/acre	–	Managed: $1,528/acre
Report range			
Ext. Detention Dry Pond[b,h]			
Average	$0.55/ft^3 storage	50	–
Report range	$0.05–$3.49/ft^3	–	$0.008–$0.33/ft
Probable range	$0.10–$5.46/ft^3	–	–
Wet Pond and Extended Detention Wet Pond[b]			
Storage vol. < 1 million ft^3			
Average	$0.55/ft^3 storage	50	$0.009–$0.08/ft
Report range	$0.05–$1.09/ft^3	–	–
Probable range	$0.55–$1.09/ft^3	–	–
Storage vol. > 1 million ft^3			
Average (probable)	$0.27/ft^3 storage	50	–
Report range (probable)	$0.05–$0.55/ft^3	–	$0.009–$0.08/ft
Probable range	$0.11–$0.55/ft^3	–	–

[a]Costs updated to 2000 dollars using the Bureau of Labor Statistics Consumer Pricing Indexes Inflation Calculator (BLS, 2000).
[b]Claytor and Schueler, 1996.
[c]References indicate the useful life for infiltration basins and infiltration trenches at 25-50 and 10-15 years, respectively. Because of the high failure rate, infiltration basins are assumed to have a useful life span of 25 years and infiltration trenches are assumed to have a useful life span of 10 years.
[d]Brown and Schueler, 1997.
[e]Useful life is assumed to equal the life of the project, assumed to be 50 years.
[f]No information was available for porous pavement. It is assumed to be similar to infiltration trenches.
[g]No information was available for filtration basins. It was assumed to be similar to infiltration basins.
[h]These practices do not meet the 80 percent TSS removal, thus it is recommended that they be used with other management practices in a treatment train.

McCALL CITY COUNCIL 216 East Park Street
AGENDA BILL McCall, Idaho 83638

Number **AB 24-071**
Meeting Date **April 4, 2024**

AGENDA ITEM INFORMATION				
SUBJECT: ***Request to Uphold the McCall Area Planning & Zoning Commission Decision to Deny FPDP-23-01 for a Floodplain Development Permit at 221 Morgan Drive*** ***A PUBLIC HEARING (FOR REQUESTED ADDITIONAL INFORMATION ONLY- NO PUBLIC COMMENT)***		***Department Approvals***	***Initials***	***Originator or Supporter***
		Mayor / Council		
		City Manager	PKK	
		Clerk		
		Treasurer		
		Community Development	BP/MG	Originator
		Police Department		
		Public Works		
		Golf Course		
COST IMPACT:	N/A	Parks and Recreation		
FUNDING SOURCE:	N/A	Airport		
		Library		
TIMELINE:	N/A	Information Systems		
		Grant Coordinator		

SUMMARY STATEMENT:

This is a request to appeal the Administrator's decision to deny a Floodplain Development Permit Application. This application is related to the previous variance request (VAR-20-01) at the same location which was denied by the McCall City Council.

During their regularly scheduled September 12, 2023 meeting the McCall Area P&Z Commission voted to uphold the denial of the subject application. During the regularly scheduled February 8, 2024 meeting, the McCall City Council conducted a properly noticed public hearing and voted to continue the hearing to April 4, 2024 to allow the applicant's representative and City Attorneys to develop legal briefs and responses regarding the outstanding issues identified during the public hearing.

The March 1, 2024 and March 19, 2024 briefs from McCall City Attorney, the applicant's attorney, and associated exhibits are attached, along with the meeting packet from the February 8, 2024 hearing.

RECOMMENDED ACTION:

1. Continue public hearing
2. Close public hearing
3. Deliberate
4. Direct Staff to prepare Findings of Fact, Conclusions of Law, and Decision documents upholding the McCall Area Planning & Zoning Commission's decision to deny FPDP-23-01.

RECORD OF COUNCIL ACTION

MEETING DATE	***ACTION***
February 11, 2021	Directed Staff to prepare draft Findings of Fact, Conclusions of Law, and Decision documents denying VAR-20-01.
February 25, 2021	Adoption of Findings of Fact, Conclusions of Law, and Decision documents denying VAR-20-01.
February 8, 2024	Continue Public Hearing to April 4, 2024
February 22, 2024	Revise due date of initial brief from February 8, 2024 motion

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Memorandum

To: **Mayor and City Council, McCall, Idaho**
From: **Wm. L. Punkoney, Wm. F. Nichols, White Peterson**
Date: **February 17, 2024**

Re: Appeal of FPDP-23-01 Floodplain Development Permit Application

I. Introduction:

This memorandum is intended to address issues raised at the City Council's February 8, 2024 meeting regarding the administrative denial of Floodplain Development Permit Application FPDP-23-01 (Hereinafter the "FPDP"). This Memorandum provides you with succinct answers to questions relevant to the Council's determination on the Sanders' appeal of the denial of their FPDP. The underlying statutes and ordinances are provided for your review as identified exhibits.

The following is a list of the questions answered in this Memorandum:

1. What is being asked of the City Council?
2. What is the nature of the application at issue?
3. What is a Floodplain Development Permit?
4. Why does McCall require Floodplain Development Permits?
5. What authority does McCall have for its Floodplain Management ordinance?
6. Why is the Council hearing this matter, and how did it get to us?
7. Who is the Floodplain administrator?
8. Why was the FPDP Denied?
9. Do the McCall Floodplain Management Ordinances violate the Constitution?

II. Discussion

1. What is being asked of the City Council?

The FPDP was denied by the City's Floodplain Administrator, and the P&Z Commission. The Applicant has now appealed to the City Council. The Council may decide to either affirm the denial, or remand the application to the Floodplain Administrator with specific instructions that the application be granted. Affirmation of the denial should take the form of written findings and conclusions.

2. What is the nature of the application is at issue?

The proposed FPDP involves grading and filling areas located within the "Area of Special Flood Hazard" which includes areas designated as wetlands. The full application is at **Exhibit A**.

3. What is a Floodplain Development Permit?

A Floodplain Development Permit is required pursuant to MCC 9.08.033 for "any development activities within special flood hazard areas." A copy of MCC 9.08.033 is provided for your review at **Exhibit B**.

4. Why does McCall require Floodplain Development Permits?

The Idaho Legislature very succinctly answered this question in Idaho Code 46-1020. A copy of that statute is provided for your review at **Exhibit C**. In summary, the legislature found that "recurring floods in Idaho threaten human life, health and property and that the public interest requires that the floodplains of Idaho be managed and regulated in order to minimize flood hazards to life, health and property." *Id.* at 1(a). These purposes are repeated in MCC Title 9 Chapter 8.

As an additional matter, by having and enforcing a FEMA approved floodplain ordinance, property owners in McCall are eligible to participate in the National Flood Insurance Program and receive aid in the event of a major flooding event. Here is a link to more information: https://www.fema.gov/floodplain-management/manage-risk/locaL

5. What authority does McCall have for its floodplain management ordinance?

The Idaho Legislature further found that it is the primary responsibility of "local units of government" for "planning, adoption and enforcement of land use regulations to accomplish this proper floodplain management." I.C. 46-1020(1)(c).

Furthermore, Idaho Code 46-1022 specifically authorizes local governments to "adopt floodplain zoning ordinances." A copy of that statute is provided for your review at **Exhibit D**. I.C. 46-1022 specifically "encourages" local governments to "adopt a floodplain map and management ordinance…" The legislature likewise found that local governments "may regulate all mapped and unmapped floodplains within its jurisdiction." Further, the legislature specifically allows local governments to adopt more restrictive standards than those provided in Idaho Code. "**Nothing in this act shall prohibit a local government from adopting more restrictive standards than those contained in this chapter**." *Id.* (Emphasis added).

6. Why is the Council hearing this matter, and how did it get to us?

a. The FPDP at issue here initially was denied by the City Floodplain Administrator on March 31, 2023. A copy of the denial is provided for your review at **Exhibit E.**

b. Staff's denial was appealed by the Applicants to the McCall Area Planning and Zoning Commission pursuant to McCall City Code 9.9.07 and Title 3, Chapter 15 which is provided at **Exhibit F.**
c. The P&Z Commission affirmed the denial of the application through findings and conclusions issued on November 7, 2023. The findings and conclusions are provided at **Exhibit G.**
d. The applicants appealed the P&Z Commission's findings and conclusions to the City Council pursuant to MCC 3.15.09. A copy of their Notice is attached as **Exhibit H.**

7. Who is the City's Floodplain Administrator?

According to MCC 9.8.041 the City Planner is the "Floodplain Administrator."

8. Why was the FPDP denied?

In short, the FPDP was denied because a FPDP that proposes grading and to deposit "fill" requires a building permit, and staff could not issue a building permit for the following reasons:

i. Depositing "fill" in areas designated as "wetlands" is defined as impermissible "harm." MCC 3.7.023. A copy of MCC 3.7.023 is provided for your review at **Exhibit I**.
ii. Depositing "fill" on areas immediately above, on, or below high-water marks is defined as impermissible "harm." MCC 3.7.023
iii. Excessive clearing of natural vegetation or change of natural landforms within fifty-feet (50') of the high-water marks is defined as impermissible "harm." MCC 3.7.023
iv. Excessive site grading and disturbance beyond the minimum necessary for development is prohibited. MCC 3.8.23

To draw the above conclusion, several McCall ordinances are required to be reviewed. The following is a summary of the ordinance authority:

i. Floodplain Development Permit Applications are reviewed by the Floodplain Administrator. MCC 9.8.042.
ii. The City Planner is designated as the Floodplain Administrator. MCC 9.8.041.
iii. According to MCC 9.8.031, no land within the Floodplain can be altered or developed "in any way without full compliance with the terms of this chapter **and other applicable regulations**." (emphasis added).
iv. Title 9 Chapter 8 is not intended in any way to "repeal, abrogate, impair, or remove the necessity of compliance with any other laws, ordinances, regulations, easements, covenants, or deed restrictions, etcetera. However, where this chapter and another conflict or overlap, whichever imposes more stringent or greater restrictions shall control." MCC 9.8.035
v. No land may be altered within the floodplain without being "in full compliance with the terms of this chapter and **other applicable regulations**." MCC 9.8.038.
vi. The requirements of McCall City Code Chapter 8, Title 3 are applicable to the FPDP. MCC 3.1.03

vii. MCC 3.8.01 states "The requirements of this code **apply to all zones**." This includes R8 and Floodplain Overlay zones.

viii. MCC 3.8.02(G) states as follows: "Building Permit Required: Until a valid building permit has been issued by the city of McCall, no construction work, **including grading**, blasting, **filling**, trenching, tree removal, etc., may be started, except as permitted in section 3.8.03 of this chapter." (Emphasis Added).

ix. The requirements of MCC 3.7.023 must be met before issuance of a building permit.

x. According to MCC 3.7.023(C)(1) which provides limitations on issuance of building permits:

a. (C) Prohibitions: No construction, alteration or activity shall cause **harm** to:

a. Water quality.

b. Fish and aquatic habitats.

c. **Wetlands.**

d. Significant wildlife habitat harboring any threatened or endangered species.

xi. MCC 3.7.023(C)(2) defines "Harm."

2. **Harm Defined: "Harm" for these purposes means**:

a. The creation of conditions which foster runoff of, or other source of fertilizers, toxic substances, or other pollutants or contaminants, into the water;

b. **The excessive clearing of natural vegetation or change of natural landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line;**

c. **The removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge**;

d. **The filling or dredging of lake bottom or wetlands**; (emphasis added)

xii. MCC 3.8.23(D) states "Site grading shall follow the natural terrain of the land and be the minimum necessary for development of the site as determined by the Administrator and Public Works Director."

9. Do the McCall Floodplain Management Ordinances violate the Constitution?

The City's Ordinance, and its resulting regulation of the floodplain is neither expressly nor impliedly pre-empted by either state or federal statutes. In fact, the City's floodplain ordinance is expressly authorized and encouraged under Idaho Code. As noted above, Idaho Code § 46-1022 provides that local governments are "encouraged" to adopt a "floodplain management ordinance." Further, "the local government may regulate all mapped and unmapped floodplains within its jurisdiction. Nothing in this act shall prohibit a local government from adopting more restrictive standards than those contained in this chapter." Floodplain Management "is the analysis and integration of the entire range of measures that can be used to prevent, reduce or mitigate flood damage in a given location, and that can protect and preserve the natural, environmental, historical, and cultural values of the floodplain." Idaho Code § 46-1021 (emphasis added).

Arguments about the denial of this application being limited by Clean Water Act (CWA) standards are a "red herring" intended to create an issue where a reviewing court would be unlikely to find one. The fact that a Section 404 permit authorizing dredging and filling can be issued does not conclude the analysis, or bind the City to any particular outcome. The Applicants own Notice of Appeal identifies that "States and political subdivisions are…free to impose more onerous standards subject to the limitations of other state and federal law."

The CWA primarily focuses on the reduction and elimination of pollution in the nation's waters to restore and maintain their chemical, physical, and biological integrity. Notably, the CWA does not preclude or inhibit local governments, including cities, from enacting laws aimed at managing floodplain areas. 33 U.S.C § 1370. The City of McCall's floodplain and similar ordinances are designed to mitigate flood risks and preserve habitat within floodplain areas. As such, the City retains the authority to implement floodplain ordinance regulations as part of their broader environmental and land use planning efforts, which are not in conflict with the CWA.

The appellant goes on to argue that Idaho Code 39-3601 does not authorize rules and requirements "beyond those of the federal clean water act." The Applicant is making the argument that because McCall cannot exceed CWA standards, it likewise cannot regulate the area of special flood hazard. Although the Applicant and the City must certainly comply with the Clean Water Act as well as state Department of Environmental Quality regulations, neither of those bodies of law form the basis for the administrative denial of the Sanders FPDP. Idaho Code Title 39 Chapter 36 does not prohibit a city from adopting a floodplain ordinance and enforcing it as the City of McCall has done. Rather, chapter 36 implements water quality standards promulgated by the EPA as required by the Clean Water Act (CWA). 33 U.S.C.A. § 1313. The Applicant's argument here completely ignores the State Disaster Preparedness Act which specifically encourages regulation of floodplains. Idaho Code §§ 46-1020 through 1024.

III. Conclusion

1. The City's Floodplain Administrator has the authority to deny a FPDP that does not meet the standards of the City Code.
2. The City's Floodplain Regulations were approved by FEMA and are not in violation of the Idaho Constitution.
3. The Sanders' FPDP was properly denied because the proposed fill represents "harm" as defined under the McCall City Code, and therefore could not be permitted.

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Memorandum

To: **Mayor and City Council, McCall, Idaho**
From: **Wm. L. Punkoney, Wm. F. Nichols, White Peterson**
Date: **March 19, 2024**

Re: Response to Appeal "Appellant's Opening Supplemental Brief In Support of Granting FPDP-23-01 Floodplain Development Permit Application

Introduction:

The Appellant's position fundamentally misinterprets the regulatory framework governing the management of floodplains and environmental protection within the City of McCall, leading to incorrect conclusions on several critical points of contention.

1. First, contrary to the Appellant's assertions, the City of McCall's ordinances unambiguously require a building permit for the placement of fill within the floodplain or any other area.
2. Second, the Shoreline and River Environs Code is explicitly applicable to such activities, underscoring the City's commitment to safeguarding its waterways.
3. Third, the Appellant's assertion that the placement of fill does not constitute "harm" is incorrect. The City's ordinances clearly define harm to include the Appellant's proposed filling of wetlands within the Floodplain Overlay Zone.
4. Federal law does not preempt the City's authority to regulate construction within the Shoreline and River Environs Zone, in fact, the City's ordinance is authorized by state and federal law.

In sum, the Appellant's arguments fail to recognize the comprehensive and lawful approach employed by the City of McCall to balance development with environmental stewardship and flood risk management. Accordingly, FPDP-23-01 was properly denied by the Floodplain Administrator.

Analysis:

1. **A Building Permit, while not required for placement of fill alone under Title II, is required for placement of fill under Title III.**

    i. **Title II is relevant, but not controlling to the exclusion of Title III**

The Appellant is correct that under Title II of the McCall City Code, the placement of fill alone does not necessitate a building permit requirement. This is primarily because Title II, by

virtue of its underlying purpose and through its adoption of the International Building Code, is geared towards the regulation of site preparation and the installation of structures and equipment affixed to real property. It does not extend its regulatory scope to the broader use of land, which includes activities such as the placement of fill. Consequently, the requirements under Title II are focused on ensuring the safety, compliance, and integrity of buildings and structures from the point of conception through to construction, rather than governing non-construction related land alterations such as filling.

ii. Title III requires a building permit for grading and filling.

In opposition to the Appellant's argument that Title III of the McCall City Code does not necessitate a building permit for the placement of fill, a thorough examination of the Code shows otherwise. At the outset of Title III, MCC 3.1.02(A) and (C) articulates the purpose of the Title, explicitly stating that one of Title III's roles is to "maintain and promote" the "natural beauty of the surrounding lands and lakeshore" and to "regulate the use of land." This foundational principle underscores the intention of Title III to govern not just the construction of structures but any alterations to the land itself. MCC 3.1.05 reinforces this position by stipulating that no land may be used or altered except in conformity with the requirements specified within Title III.[1] This comprehensive mandate clearly encompasses the placement of fill as an activity requiring adherence to Title III's regulations.

To place this fact beyond any doubt, MCC 3.8.02(G) explicitly requires that "no construction work, including **grading**, blasting, **filling**, trenching, **tree removal**, etc., may be started" without first obtaining a valid building permit from the City of McCall. (emphasis added). This clause directly links the act of filling — a form of construction work by the Code's own definition — with the prerequisite of acquiring a building permit. This provision serves as a clear legal basis for the argument that Title III does, in fact, mandate a building permit for activities such as the placement of fill, underscoring the Code's comprehensive approach to land use regulation and its commitment to overseeing developments that impact the physical and environmental character of the land within its jurisdiction.

That Title II does not require a building permit for placement of fill is immaterial. In this context, Title II itself has little or no application because there is no current application for placement of a structure on the land. As such, the detailed requirements under Title II pertaining to site preparation to support a structure will not need to be complied with. If a building were considered, then certain regulations governing compaction and placement of fill become relevant under Title II. That being the case has no bearing on the scope of Title III, which encompasses the overall use of land and has more stringent prohibitions regarding land use and alteration than does Title II.

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[1] MCC 3.1.05(A) states in full:

> Conformance Required: Except as herein specified, no land, building, structure or premises, and no part thereof, shall hereafter be used, and no building or part thereof, or other structures, shall be located, erected, moved, reconstructed, extended, enlarged or altered except in conformity with the requirements herein specified for the zone in which it is located; nor shall any yard, lot or open space be reduced in dimensions or area to an amount less than the minimum requirements set forth herein.

2. The Shoreline and River Environs Code applies to FPDP-23-01 because a building permit is required for placement of fill under Title III, and because the Shoreline and River Environs Code itself requires a building permit.

Appellant argues that the Shoreline and River Environs Code (MCC 3.7.020 et seq.) does not apply because it only applies to activities requiring a building permit or conditional use permit, and that because neither Title II nor Title III require a building permit, the requirements within the zone do not apply. Based on that, Appellant argues, the only requirement is for compliance with Title IX, Chapter 8, "Flood Control Regulations (Overlay)." The Appellant's analysis is incorrect.

The Shoreline and River Environs Code is unequivocally applicable to FPDP-23-01 for several compelling reasons that are rooted in the regulatory framework provided by Title III of the McCall City Code, as discussed in the previous section, and further supported by the specific provisions within the Shoreline and River Environs Zone regulations.

First, Title III's requirement for a building permit encompasses a wide range of development activities, including the placement of fill, thereby establishing a foundational legal basis for the applicability of the Shoreline and River Environs Code to FPDP-23-01.[2]

Second, the Shoreline and River Environs Code's reach is explicitly designed to extend beyond mere construction to include any alteration or development along Payette Lake's shoreline and the Payette River's banks and vicinity, as clearly stated in MCC 3.7.020.[3] This provision underscores the ordinance's intent to oversee and regulate any actions that could impact the ecological and aesthetic integrity of these areas.

Further reinforcing this perspective, MCC 3.7.022(B) explicitly acknowledges that the requirements set forth in Title IX, Chapter 8, "Flood Control Regulations (Overlay)," operate in conjunction with, and not instead of, the regulations delineated within the Shoreline and River Environs Zone.[4] It does so by requiring that all conditions of Title IX, Chapter 8, be met prior to issuance of a permit in the Shoreline and River Environs Zone. This ensures that development activities, including fill placement, are subjected to a comprehensive evaluation that considers both flood risk management and the preservation of shoreline and riverine environments. This

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[2] MCC 3.8.02(G); *see also* infra Section 1.

[3] MCC 3.7.020 states:

> Payette Lake and the North Fork of the Payette River are critical economic resources of the planning jurisdiction, because they are the distinguishing features of this area making it a destination resort for tourists and summer residents. It is therefore the purpose of this section 3.7.02 to regulate development along and alterations of the shoreline of Payette Lake and the banks and immediate vicinity of the Payette River in order to protect and maintain water quality, fish and wildlife habitat, edge and forest habitat, vistas, and public visual and physical access.

[4] MCC 3.7.022: PERMITTED USES:

> All those uses permitted in the underlying zones upon which this zone is superimposed shall be permitted, provided they satisfy the special conditions set forth in this chapter, except that:
>
> (B) No building and no land filling shall be permitted within a floodway and no building within an area of special flood hazard as such terms are defined in title IX, chapter 8, "Flood Control Regulations (Overlay)", of this code, unless the applicant complies with the standards set forth in that chapter.

goes hand in hand with MCC 9.8.043(g), which requires that local permits, including a building permit, are obtained prior to a floodplain development permit being issued.[5]

Most crucially, MCC 3.7.023(B) states that no building permit shall be issued, nor "any development, grading, or alteration of any land within this zone permitted," unless specific criteria are met.[6] This includes the act of filling which is a form of land alteration or development necessitating compliance with the ordinance's criteria before such activities can proceed. It is within this framework that the applicability of the Shoreline and River Environs Zone to the placement of fill in FPDP-23-01 becomes indisputable.

In short, the comprehensive regulatory approach embodied in Title III, alongside the specific provisions of the Shoreline and River Environs Code, establish a clear and undeniable legal foundation for the applicability of the Shoreline and River Environs Code to FPDP-23-01. The ordinance not only applies, but serves as a critical mechanism for ensuring that development activities like the placement of fill are conducted in a manner that aligns with the overarching goals of environmental stewardship, flood risk management, and the preservation of McCall's unique natural landscapes.

3. The placement of fill constitutes harm to wetlands under MCC 3.7.023(C).

Appellant argues that, "even if a building permit is required and the Shoreline and River Environs Zone ordinance is found to apply, the conclusion that FPDP-23-01's proposed placement of fill material . . . constitutes 'harm' is . . . unreasonable," and unsupportable. *App.'s Opening Supp. Br. in Supp. of Granting FPDP-23-01*, Pg. 15. Appellant further argues that the issuance of a Section 404 permit allowing for placement of fill proves that no harm is caused.

The Appellant's analysis is incorrect. McCall City Code unambiguously identifies deposit of fill and grading in wetlands within the Shoreline and River Environs Zone as "harm." At the outset, it is important to understand that a Section 404 permit requires choosing the "least environmentally damaging practicable alternative" to minimize the negative impacts of placing fill in wetlands. 40 CFR 230.10(a). As such, the issuance of a Section 404 permit under federal regulations does not mean an activity, like filling in wetlands, isn't considered harmful.

The inclusion of a requirement for a Section 404 permit within MCC 3.7.023(B)(3) does not negate the fundamental premise that the act of filling wetlands within the floodplain overlay zone is harmful under the McCall City Code.[7] Instead, the Section 404 permit requirement should be understood as a necessary but not solely sufficient condition for proceeding with development within the floodplain, ensuring that such activities are subject to federal oversight and compliance with the Clean Water Act. However, requiring compliance with federal

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[5] MCC 9.8.043(g) states as a requirement: "Certification that all other local, State, and Federal permits required prior to floodplain development permit issuance have been received."

[6] MCC 3.7.023(B) states: "No conditional use or building permit shall be issued, nor is any development, grading, or alteration of any land within this zone permitted, unless the applicant establishes to the satisfaction of the commission and council in the case of a conditional use, or of the administrator in the case of a building permit, that . . ."

[7] MCC 3.7.023(B) states that as a requirement for development with the zone that an applicant obtain a letter from a wetlands specialist or a proof that a section 404 permit has been issued or is forthcoming.

regulations, does not exempt development activities from local regulations prohibiting environmental harm or from the local regulatory framework designed to protect wetland ecosystems.

Even in instances where a Section 404 permit has been issued for the placement of fill in wetlands within the shoreline and river environs zone, such actions unambiguously constitute "harm" under the provisions of MCC 3.7.023(C) of the McCall City Code. This conclusion is drawn from a straightforward definition of "harm," to include "**the filling or dredging of lake bottoms or wetlands**."[8] This definition is unequivocal and establishes a clear baseline against which actions affecting wetlands are measured, even with the issuance of a Section 404 permit.

Moreover, MCC 3.1.05(B) fortifies this argument by stipulating that in the event of any conflict between provisions, "**the more restrictive provisions shall prevail**."(emphasis added). This clause is instrumental in resolving any perceived ambiguity between the requirement to obtain a Section 404 permit and the prohibition against placement of fill under MCC 3.7.023(C). Given that MCC 3.7.023(C) specifically identifies fill placement in wetlands within the floodplain overlay zone as harmful, this local regulation constitutes a more restrictive provision that takes precedence, thereby reinforcing the stance that such activities, regardless of the issuance of federal permits, are considered harmful under local law.

In essence, the issuance of a Section 404 permit does not absolve the harm caused by filling activities, as determined by City Code that explicitly defines and prohibit such harm to wetlands. This interpretation aligns with the overarching intent of McCall's regulatory framework to offer robust protection to its natural landscapes, ensuring that wetland areas remain safeguarded from activities that could compromise their ecological function and value.

4. Neither Federal nor State Law prohibit a City from regulating the use of land within its floodplain.

Appellant argues that the City of McCall has exceeded its authority under Idaho law because it imposes requirements on applicants beyond that of the Clean Water Act, which is prohibited by Idaho Law. As authority for this, the Appellant cites to Idaho Code § 39-3601, which states:

> It is the intent of the legislature that the state of Idaho fully meet the goals and requirements of the federal clean water act and that the rules promulgated under this chapter not impose requirements beyond those of the federal clean water act.

The Appellant's analysis is incorrect. The Clean Water Act's purpose is solely related to the preservation of water as a resource, and Idaho Code Title 39 Chapter 36 entitled "Water Quality" focuses solely on the preservation of water quality, making no mention of floodplains or preservation of wetlands. As such, Title 39 Chapter 36 outlines policies and procedures for maintaining water quality and details the roles and responsibilities of various entities in managing and protecting water resources in Idaho. In doing so, it places limitations on those

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[8] MCC 3.7.023(C). (emphasis added).

entities responsible for preserving water quality, which does not affect the City's authority to regulate floodplains or wetlands.

The City of McCall's authority to regulate floodplains and wetland fill operations derives, in significant part, from its participation in the National Flood Insurance Program (NFIP). The NFIP, established by the Federal Emergency Management Agency (FEMA), conditions the availability of flood insurance on the adoption and enforcement of floodplain management ordinances by local governments. These ordinances are designed to mitigate the risks associated with flood hazards and are integral to the NFIP's broader objectives of reducing loss of life and property damage due to flooding. The program encourages communities to exceed the minimum floodplain management standards set by FEMA, thereby affording local governments considerable latitude to implement measures tailored to their specific needs and vulnerabilities. In fact, McCall's floodplain management ordinances were adopted as a precondition of participation in the NFIP, and are substantially in the form required by the federal government for participation in the NFIP.

Furthermore, the State Disaster Preparedness Act specifically encourages regulation of floodplains. Idaho Code §§ 46-1020 through 1024. Idaho Code § 46-1022 provides that local governments are "encouraged" to adopt a "floodplain management ordinance." Further, "local government may regulate all mapped and unmapped floodplains within its jurisdiction," and "**[n]othing in this act shall prohibit a local government from adopting more restrictive standards than those contained in this chapter.**" Idaho Code § 46-1022 (emphasis added). This is further supported by the definition of "Floodplain Management" which is "the analysis and integration of the entire range of measures that can be used to prevent, reduce or mitigate flood damage in a given location, **and that can protect and preserve the natural, environmental, historical, and cultural values of the floodplain.**" Idaho Code § 46-1021 (emphasis added).

In this context, the City of McCall's ordinances regulating the placement of fill within floodplains and wetlands can be seen as complementary to, rather than in conflict with, the requirements of the CWA and the NFIP. The City's regulations not only align with the spirit of federal environmental protection efforts but also fulfill the mandate of the NFIP by adopting local measures that enhance floodplain management, which includes preservation of the floodplain.

In short, neither Federal nor State law preempts the City of McCall's exercise of its regulatory authority over floodplain management. The City's ordinances represent a localized response to the challenges of flood risk and environmental protection, reinforced by the NFIP's requirements for community participation.

Conclusion

In conclusion, the appellant's challenges to the necessity of a building permit for fill placement, the applicability of the Shoreline and River Environs Code, the definition of "harm" to wetlands, and the alleged preemption by state and federal law are found to be without merit. Through a careful interpretation of the City of McCall's ordinances, it is evident that the City's

regulations are designed to promote sustainable development, protect public safety and natural resources, and mitigate flood risks in alignment with both the spirit and the letter of broader environmental and floodplain management objectives set forth at the federal and state levels. The City's approach not only adheres to but enhances the regulatory framework provided by the Clean Water Act and the National Flood Insurance Program, ensuring that local actions contribute positively to overarching goals of environmental preservation and community safety. As such, the appellant's positions are refuted, affirming the City's authority and responsibility to regulate activities within its floodplains and shorelines for the welfare of its community and the protection of its natural environment. Accordingly, FPDP-23-01 was properly denied, and the Floodplain Administrator's determination should be affirmed by the City Council.

White, Peterson, Gigray, & Nichols, P.A.

Wm. L. Punkoney

Wm. F. Nichols

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APPELLANT'S OPENING SUPPLEMENTAL BRIEF IN SUPPORT OF GRANTING FPDP-23-01

March 1, 2024

City of McCall
McCall City Clerk and Council
216 East Park Street
McCall, Idaho 83638

Re: Supplemental Briefing Requested for Appeal of FPDP-23-01 Floodplain Development Permit Application for River's Crossing Lot 19 Block 2, Application filed January 23, 2023, Administrative Denial emailed March 31, 2023, Planning & Zoning Commission Findings of Fact, Conclusions of Law, and Decision upholding the Administrative Denial dated November 13, 2023.

Dear Madam Clerk and Councilmembers:

On behalf of Dwain and Cindy Sanders, we submit this supplemental legal brief in accordance with the decision of McCall City Council to accept supplemental briefing on the issues raised in the appeal of FPDP-23-01 of the McCall Area Planning and Zoning Commission's Findings of Facts, Conclusions of Law, and Decision dated November 13, 2023. McCall Area Planning and Zoning Commission upheld the Administrator's Denial of Floodplain Development Permit Application FPDP-23-01, dated March 31, 2023. During the appeal to City Council which hearing was held on February 8, 2023, Council requested additional legal analysis; therefore, we provide the following Appellant's Opening Supplemental Brief in support of our request that these decisions be reversed and that City Council grant FPDP-23-01.

Chart Summarizing this Process:

Title	Description	City/Federal Action, if any
CLOMR	**Conditional Letter of Map Revision** January 23, 2023, Sanders applied for **FPDP-23-01** as part of CLOMR application to begin the process of removing a 0.48-acre portion of their 5.3-acre property from the special flood hazard area Community Acknowledgement form asks City Administrator to confirm project as proposed would comply with Local floodplain regulations	FPDF-23-01 denied CLOMR unsigned by City Administrator on the grounds that FPDP denied, (12/7/2022 letter from Forsgren and Associates to Brian Parker requesting signature on Community Acknowledgement Form, CLOMR project narrative, supporting documents)
Nation Wide Permit No. 29 "404 Permit"	This is a U.S. Army Corps of Engineers permit granted to the Sanders - certain project activities *subject to mitigation requirements by Sanders*: Activities include discharge of fill material within wetlands, 968 cubic yards of fill material into 0.15-acres of jurisdictional wetlands	8/29/2020 Joint Application for Nation Wide Permit 9/1/2020 NWP authorized by U.S. Army Corps of Engineers 4/11/2022 NWP extended 12 months 12/8/2023 Authorization confirmed by U.S. Army Corps of Engineers
Place fill	**With the CLOMR and FPDF-23-01 in hand, Sanders will place fill,** 968 cubic yards of fill material into 0.15-acres of jurisdictional wetlands	
LOMR	**Letter of Map Revision** This would revise FEMA's Flood Insurance Rate Map	

I.
ISSUES PRESENTED ON APPEAL

1. Whether the McCall City Code requires a building permit in addition to a floodplain development permit when the applicant proposes only to place fill within a special flood hazard area in aid of the CLOMR process and pursuant to a Section 404 permit.

2. Whether the Shoreline and River Environs Ordinance applies to FPDD-23-01.

3. Assuming the Shorelines and River Environs Ordinance applies to FPDP-23-01, whether the record below supports the Administrator's and P&Z's Findings and Conclusion that the proposed placement of fill into *jurisdictional wetlands*[1] unconditionally constitutes "harm" as defined by MCC 3.7.023(C), notwithstanding that a Clean Water Act Section 404 permit has been issued to place such fill.

4. Whether the Administrator and P&Z imposed conditions on FPDP-23-01 that are beyond those required for *this* Section 404 permit and therefore violated both Article XII § 2 of the Idaho Constitution and Idaho Code § 50-301.

II.
SUMMARY OF ARGUMENT

An applicant who complies with all applicable permit criteria and procedures cannot be denied their permit. Yet that is exactly what has happened to the Sanders in their application for FPDP-23-01. By imposing the additional requirement to obtain a building permit and subjecting FPDP-23-01 to the Shoreline and River Environs Zone—neither of which apply to a floodplain development permit proposing only to place fill in the special flood hazard area in aid of the Conditional Letter of Map Revision application process—the Administrator and McCall Area Planning and Zoning Commission ("P&Z") denied the Sanders' their right to a fair proceeding in applying for FPDP-23-01.

As the Administrator and P&Z found, FPDP-23-01 met all requirements in Title IX, Chapter 8 to obtain a floodplain development permit except for MCC 9.8.043(A)(1)(g). That section requires "certification that all other local, State, and Federal permits required prior to floodplain development permit issuance have been received." However, according to P&Z, "the applicant has not received a building permit *as required* . . . [b]ecause the application has not demonstrated compliance with the Shoreline and River Environs Requirements for Development." Although the Sanders have obtained all other necessary permits, the Administrator and P&Z erroneously believed that a building permit was required, and even if

[1] The term "jurisdictional wetlands" is used to define wetlands that meet the definition of waters of the United States as that term applies to 33 U.S.C. § 1344(g)(1). *See Sacket v. Envtl. Prot. Agency*, 143 S. Ct. 1322 (2023).

one was required, erroneously found that the proposed placement of fill will create "harm" as defined by McCall Code Section 3.7.023(C)(2).

A building permit is required to construct a building, not to place a small amount of fill within the special flood hazard area for the sole purpose of obtaining a Conditional Letter of Map Revision—and eventually a Letter of Map Revision to remove a portion of the Sanders' property from the special flood hazard area. Nor is FPDP-23-01 subject to the Shoreline and River Environs Zone. That ordinance applies only to development triggering design review and requiring a building permit or conditional use permit, and only prohibits "building within the area of special flood hazard . . . unless the applicant complies with the standards" in Title IX, Chapter 8. Because no building, structure, or development subject to design review is proposed by FPDP-23-01, compliance with the Shoreline and River Environs Zone Ordinance is not a required permit criterion in Title IX, Chater 8 for FPDP-23-01.

That leaves the Administrator's and P&Z's decision on the false reliance and incorrect finding that placing fill in waters of the United States pursuant to a validly issued Section 404 permit unconditionally causes "harm" to wetlands. Even if compliance with the Shoreline and River Environs Zone is a required permit criterion, the record below and the Section 404 permit clearly establish that the proposed placement of fill will not "harm" 0.15-acres of wetlands. Indeed, the Sanders' Section 404 permit requires them to complete compensatory mitigation for impacts to the wetlands by enhancing and establishing 0.30 acres of new wetlands on their parcel in accordance with the approved *Sanders Property Rivers Crossing Subdivision Mitigation Plan dated October 17, 2023* ("*Mitigation Plan*").[2] That requirement alone is sufficient not to find "harm" to jurisdictional wetlands.

Finally, the Administrator's and P&Z's denials lead to the inescapable conclusion that the City of McCall is imposing requirements beyond those of the federal clean water act with respect to FPDP-23-01. Although the CWA sets the national floor for regulating the discharge of pollutants into waters of the United States, Idaho law prohibits municipalities from regulating such discharges more stringently than the CWA. Hence, if the City of McCall finds FPDP-23-01 will cause harm to jurisdictional wetlands when the sole activity proposed is authorized and subject to the conditions of a validly issued Section 404 permit, including a Section 401 water quality certification by the Idaho Department of Environmental Quality, it necessarily imposes more stringent regulation than the CWA. Such a finding is void as a matter of law, and therefore is not a valid criterion to impose on FPDP-23-01.

Because FPDP-23-01 meets all criteria for a floodplain development permit, the decisions below must be reversed, and FPDP-23-01 granted.

[2] A copy of the Mitigation Plan is attached hereto as **Exhibit A** and **Exhibit B**.

III.
FACTS AND PERMITTING PROCESS

A. Conditional Letter of Map Revision Process

Dwain and Cindy Sanders simply desire to elevate a portion of their residential property out of the floodplain using a federally recognized process called a Letter of Map Revision ("LOMR"). In January 2023, the Sanders applied for FPDP-23-01 as part of a Conditional Letter of Map Revision ("CLOMR") application to begin the process of removing a 0.48-acre portion of their 5.3-acre property from the special flood hazard area. This process is administered by the Federal Emergency Management Agency ("FEMA") and recognized by McCall City Code in Title IX, Chapter 8. The purpose of a LOMR is to revise FEMA's Flood Insurance Rate Map ("FIRM"). In this case, the Sanders must first obtain a CLOMR because they propose physical modifications to the floodplain that will cause an increase of greater than one foot in the special flood hazard area. Unlike a LOMR, a CLOMR does not cause revision of an effective FIRM. Rather, a CLOMR is a letter *to* the Community Official (in MCC the Administrator is tasked with this) responsible for floodplain management that *describes* expected changes resulting from the project and states whether such changes would be in accordance with the National Flood Insurance Program regulations. In addition, a CLOMR applicant must show proposed activities will comply with the Endangered Species Act.

After a CLOMR is issued, and the proposed floodplain modifications are completed, the Sanders can request a LOMR to revise the FIRM. This process is recognized in Title IX, Chapter 8 of the McCall City Code and is consistent with the Idaho Disaster Preparedness Act's purpose "[t]o encourage the orderly development and wise use of floodplains."[3]

The Sanders' CLOMR application cannot be completed unless the Community Official responsible for floodplain management—the McCall City Planner—acknowledges that the "proposed project meets or is designed to meet all of the community floodplain management requirements . . . and that all necessary Federal, State, and local permits have been, or in the cases of a condition LOMR, will be obtained." Even though the Sanders have obtained all necessary Federal and State permits, the Community Official has failed to acknowledge the application because the Administrator and P&Z erroneously contend that a building permit is required but cannot be issued for the development activities proposed in FPDP-23-01.

[3] I.C. § 46-1020(2)(f); *see* MCC 9.9.02 (defining LOMR and CLOMR); MCC 9.8.053(A)(3) ("The applicant/developer shall submit an application for a Conditional Letter of Map Revision (CLOMR) prior to preliminary plat approval and have obtained a Letter of Map Revision (LOMR) *prior to any building permits for structures* being issued.").

B. Section 404 of the Clean Water Act – Nationwide Permit No. 29

The federal Clean Water Act prohibits the discharge of pollutants into waters of the United States without a permit.[4] Section 404 of the CWA governs the discharge of "dredged or fill material into the navigable waters at specified disposal sites," including jurisdictional wetlands.[5] The Army Corps of Engineers may "issue general permits . . . on a nationwide basis for any category of activities involving discharges of dredged of fill material if . . . the activities in such category are similar in nature[,] . . . will cause only minimal adverse environmental effects when performed separately, and will have only a minimal cumulative adverse effect on the environment."[6] A Nationwide Permit Number 29 ("NWP No. 29") is one such general permit and authorizes, among other things, the construction of building pads necessary for residential development.[7]

As part of the CLOMR application, as well as the application for FPDP-23-01, the Sanders applied for and were issued an NWP No. 29.[8] This permit is a "necessary Federal permit" because the proposed activities will modify the floodplain by discharging 968 cubic yards of fill material into 0.15-acres of jurisdictional wetlands to construct a building pad. Aside from compliance with both the general and regional conditions for an NWP No. 29 permit, the Sanders must also comply with three Special Conditions specific to the activities proposed on their property.

Special Condition 1 requires mitigation for the impacts to 0.15-acres of jurisdictional wetlands by constructing 0.30-acres of new wetland on the Sanders' property in accordance with the *Mitigation Plan*. Thus, activities required under FPDP-23-01 will result in a net gain of wetland acreage adjacent to undisturbed wetlands along the North Fork Payette River.

Special Condition 2 requires the Sanders to submit monitoring reports for three years *or* "until the Corps has determined the mitigation site has met its performance standards" as described in the *Mitigation Plan*.

Special Condition 3 requires the Sanders to take responsibility for all work done by any contractor and ensure that such contractors comply with all general, regional and special conditions in the permit. Failure to comply with all terms and conditions of a Section 404 permit can result in civil or criminal enforcement action and significant fines.[9]

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[4] 33 U.S.C. § 1311(a) ("Except as in compliance with this section and sections 1312, 1316, 1317, 1328, 1342, and 1344 of this title, the discharge of any pollutant by any person shall be unlawful.").
[5] 33 U.S.C. § 1344(a); *see also* 33 C.F.R. § 323.2 (defining "discharge of dredged material" and "discharge of fill material").
[6] 33 U.S.C. § 1344(e).
[7] *See* 86 Fed. Reg. 2744, 2784-85 (Jan 13, 2021).
[8] In 2020, the Sanders obtained this same permit for a separate application process. Although that permit expired because the Sanders were unsuccessful in that application process, the Corp issued a substantially similar NWP No. 29 permit on December 8, 2023.
[9] *See* 33 C.F.R. § 326.6.

C. Section 401 Water Quality Certification Issued by the State of Idaho

Section 401 of the CWA allows States and authorized Tribal Nations to grant, deny, or waive water quality certification of federal permits authorizing the discharge of dredged or fill material into federally regulated waters within their borders.[10] These certifications ensure that projects comply with state water quality standards and any other water quality requirements under state law. Absent a certification or waiver, a Section 404 permit, such as an NWP No. 29, cannot be issued.[11]

The Idaho Department of Environmental Quality ("IDEQ") has issued a Section 401 Water Quality Certification for the NWP No. 29 general permit provided that the proposed activities do not cause loss of more than 300 linear feet of streambed or loss of more than 0.5-acres of jurisdictional wetlands. As part of the certification, the permittee must comply with additional state-specific conditions that are set forth in IDEQ's letter attached to the Sanders' Section 404 permit. The CWA authorizes these conditions, which are designed to prevent degradation of Idaho's surface water resources, including the North Fork Payette River. Since the Sanders' Section 404 permit authorizes the discharge of fill material into only 0.15 acres of jurisdiction wetlands, it meets Idaho's Section 401 Water Quality Certification for NWP No. 29 general permits provided the Sanders comply with the state-specific conditions.

D. Floodplain Development Permits are Regulated under MCC

If the Sanders cannot develop within the Floodplain despite their compliance with local and federal requirements, it makes the McCall City Code and application process for a permit to develop in the floodplain entirely useless.

The City of McCall regulates floodplain development under Title IX, Chapter 8 the McCall City Code pursuant to its authority under the Idaho Disaster Preparedness Act, Idaho Code §46-1001, et seq. The provisions in Chapter 8 are designed to, among other things, "[p]rotect human life, health, and property; . . . [h]elp maintain a stable tax base by providing for the sound use and development of flood prone areas; . . . [e]nsure potential buyers are notified the property is in an area of special flood hazard; and [e]nsure those who occupy the areas of special flood hazard assume responsibility for their actions."

To accomplish its purpose, Chapter 8 includes "methods and provisions" to "[c]ontrol filling, grading, dredging, and other development which may increase flood damage or erosion" and "[p]reserve and restore natural floodplains, stream channels, and natural protective barriers which carry and store flood waters." Chapter 8 defines the special flood hazard area as "land in the floodplain subject to a one percent (1%) or greater chance of flooding in any given year. The combined definitions of "development" and "development activity" in Chapter 8 are nearly

[10] 33 U.S.C. § 1341(a).
[11] *Id.*

identical to the Idaho Disaster Preparedness Act. Clearly, "development"[12] for purposes of Title IX, Chapter 8 includes the placement of fill material as proposed by FPDP-23-01.

Title IX, Chapter 8 establishes procedures for authorizing both "development" and "development activities" in the special flood hazard area, including requiring a floodplain development permit. Under MCC 9.8.042(A), the Administrator has a duty to "[r]eview all floodplain development applications and issue permits for all proposed development within the special flood hazard areas to assure that the requirements of this chapter have been satisfied . . . [and] that all necessary local, State, and Federal permits have been received, including section 404 of the [CWA]." In other words, if the floodplain development permit meets the requirements of Title IX, Chapter 8, the Administrator has no discretion to deny it.

E. FPDP-23-01

With respect to FPDP-23-01, the Administrator and P&Z concluded that it met all the requirements of Title IX, Chapter 8 except for one: the a floodplain development applicant must certify to the Administrator that "all other local, State, and Federal permits required prior to floodplain development permit issuance have been received."[13] However, despite meeting all other requirements, including receiving a Section 404 permit, the Administrator denied FPDP-23-01 because all necessary "local" permits had not been received. Although correct in finding the "provisions of Title 9 authorizing FDP's specifically subordinate and subjugate such permits to other *applicable* standards within the McCall City Code," the Administrator incorrectly reasoned that Title III was applicable to *this* floodplain development permit. Specifically, the Administrator denied FPDP-23-01 because: 1) no building permit had been issued; 2) the proposed development would cause unpermitted "harm," as defined in MCC 3.7.023(C)(2); and 3) because no building permit application or Shoreline and River Environs Design Review application had been submitted, any site grading would be in excess of the minimum necessary for development of the site.

The Sanders appealed to P&Z, which also denied FPDP-23-01. Similar to the Administrator's decision, P&Z found that FPDP-23-01 required a building permit and that one could not be obtained because "the application has not demonstrated compliance with the Shoreline and River Environs Requirements for Development." P&Z reasoned that "the facts in

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[12] The Act defines "development" as:

> any man-made change to improved or unimproved real estate, including, but not limited to, the construction of buildings, structures or accessory structures, or the construction of additions or substantial improvements to buildings, structures or accessory structures; the placement of mobile homes; mining, dredging, filling, grading, paving, excavation or drilling operations; and the deposition or extraction of materials; specifically including the construction of dikes, berms and levees.[12]

[13] MCC 9.8.043(A)(1)(g)

the record show that the proposed development" will create "harm as defined in McCall Code Section 3.7.023(C)(2)," and offered three bases for finding such "harm": 1) excessive clearing of natural vegetation or change in natural land forms within the area between the . . . high-water mark and the fifty-foot (50') [building] setback line; 2) removal, burial, or destruction in whole or in part of . . . other features of the . . . high water mark, the land below the same, or the immediate upland edge; and 3) the filling or dredging of lake bottom or wetlands.

The decisions by the Administrator and P&Z apply the Shoreline and River Environs Zone to FPDP-23-01. But because both decisions found "harm," a building permit could not be issued, which caused FPDP-23-01 to be denied because "all necessary local . . . permits" had not been received. Although the Sanders applied for a building permit to place the proposed fill material, they contend that application of the Shoreline and River Environs Zone ordinance as well as the requirement for a building permit are unreasonable interpretations of the McCall City Code. Additionally, the Sanders contend that even if the SREZ ordinance applies, the record below, including issuance of a Section 404 permit, fails to support any reasonable or lawful basis for finding "harm" to the jurisdictional wetlands on their property.

IV.
STANDARD OF REVIEW

When the McCall City Council ("Council") reviews a "notice of appeal" of P&Z's decision to deny a floodplain development permit, "proceedings before the council *shall be on the record made below*."[14] Although McCall City Code does not require any particular standard of review when Council acts in an appellate role, it does mandate Council not to solicit, accept, or consider new or additional facts or evidence that are outside the record made below.[15] In addition, Council's appellate review should, at a minimum, focus on the reasonableness of the decisions being reviewed. Under the Idaho Administrative Procedures Act ("IDAPA") review includes whether the decision below was:

1. In violation of constitutional or statutory provisions [or local ordinances];
2. In excess of the statutory authority of the agency [or P&Z];
3. Made on unlawful procedure;
4. Not supported by substantial evidence on the record as a whole; or
5. Arbitrary, capricious, or an abuse of discretion.

The IDAPA standards of review are well-established and provide a robust framework from which Council can determine the reasonableness of the decisions below.

MCC 3.15.08(A) expressly requires review "on the record made below," indicating that Council's review is appellate in nature, and based on the findings and conclusions of the prior

[14] MCC 3.15.08(A) (emphasis added); *see also* MCC 3.15.01(B) ("[T]he procedures in this chapter apply to . . . other land use decisions referenced by . . . Title IX of this code."); MCC 9.9.07.
[15] *See* MCC 3.15.08(A).

decision-maker. Finally, under MCC 3.15.08(D), Council must ultimately "[g]rant or deny the appeal or the permit." As no authority exists to impose additional conditions on FPDP-23-01, Council's review is limited to the four corners of the decisions below.

Whatever standard of review is used, the Sanders request that Council expressly articulate it and provide the reasoning for choosing it. This small step ensures not just a complete record but also the Sanders' rights to fair procedure, notice, and unbiased decision making are protected.

Council must also make its decision in the time required by McCall City Code. "After the hearing has been held, the council may" delay its decision "for no longer than sixty (60) days . . . for further study or hearing," and must "[g]rant or deny the appeal . . . no later than sixty (60) days from the date of the hearing."[16] Here, the hearing was held on February 8, 2024. Council chose to delay its decision for further study by requesting supplemental briefing from the applicant. Therefore, a decision to grant or deny FPDP-23-01 must be rendered no later than April 8, 2024.

V.
ARGUMENT

A. FPDP-23-01 and the Placement of Fill <u>Does Not</u> Require a Building Permit.

The threshold issue is whether a building permit is required to obtain FPDP-23-01. If not, the Shoreline and River Environs Zone does not apply, and all permit criteria *applicable* to FPDP-23-01 are found within Title IX, Chapter 8. As discussed below, a plain reading of the unambiguous provisions in the McCall City Code requires this result. The Administrator's and P&Z's misapplication of these provisions is unreasonable because it leads to the absurd result that anyone placing fill material on their property—e.g. whether for gardening, composting, or children's sandboxes—must obtain a building permit before doing so. The McCall City Code does not give the Administrator discretion to require building permits for some things and not others. Rather the activities that require a building permit are unambiguously defined in Title II, and not Title III or Title IX. Under a plain reading of the McCall City Code, FPDP-23-01, which seeks only to place fill within the special flood hazard area—a portion of which is jurisdiction wetlands—in aid of a CLOMR application, requires only 1) a Section 404 permit and 2) a floodplain development permit.

"The objective in interpreting a statute or ordinance is to derive the intent of the legislative body that adopted the act."[17] If the ordinance is unambiguous, the clearly expressed intent of the legislative body must be given effect, and there is no occasion to consider the rules of statutory construction."[18] Although an ordinance is ambiguous where reasonable minds might

[16] MCC 3.15.08(D)(2).
[17] *Friends of Farm to Market v. Valley County*, 137 Idaho 192, 197, 46 P.3d 9, 14 (2002) (citing *Ada County v.* Gibson, 126 Idaho 854, 856, 893 P.2d 801, 803 (Ct. App. 1995).
[18] *Id.*

differ or be uncertain as to the its meaning, it is not ambiguous just because the parties disagree as to the meaning.[19] If an ordinance is ambiguous, the rules of statutory construction may guide the interpretation and the decision maker may consider the reasonableness of the proposed interpretations.[20] "All sections of applicable statutes must be construed together so as to determine the legislature's intent," and be read so that "no part is rendered superfluous or insignificant."[21]

A floodplain development permit to place fill pursuant to Section 404 permit in aid of a the CLOMR application process does not also require a building permit. Rather, building permits are required for the "construction, improvement, extension, alteration or demolition of *any building, residence or structure*" falling under the jurisdiction of the City of McCall.[22] As defined by MCC 3.2.02, a building permit is:

> ***A permit pursuant to title II*** of [the McCall City Code], including without limitation the international building code adopted by *that title*. Such permits shall be issued *only if the activity to be permitted conforms to title II and this title*. Building permits are issued by the city building department. (emphasis supplied).

Thus, McCall City Code is unambiguous that Title II defines when and for what activities a building permit is required. Title III does not because it explicitly places that burden on Title II.

Title II is named and deals exclusively with "Building Regulations," and is known as the "*MCCALL AREA BUILDING REGULATIONS*." With few exceptions, it applies to "*all building and construction* within the McCall Area."[23] Title II expressly incorporates definitions from the Idaho Building Code Act ("IBCA"). The IBCA defines "construction" as "the erection, fabrication, reconstruction, demolition, alteration, conversion, or repair ***of a building*** **or the installation of equipment therein** ***normally a part of the structure***."[24] [Emphasis Added]. Similarly, Title II defines "building" as "[a]ny *structure* used or intended for supporting or sheltering any use or occupancy."[25] It defines "structure" as "[a]nything constructed or erected, the use of which requires location on the ground or attachments to something having a fixed location on the ground," which includes things like "buildings . . . walls, fences, decks, patios, satellite dishes, billboards, fuel tanks . . . and piers."

True, not all structures are inhabited buildings, but structures, as defined by Title II, are "constructed or erected" assemblages of components located on the ground or attached to something located on the ground, the precise design and shape of which performs a specific

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[19] *Ada County v. Gibson*, 126 Idaho 854, 856, 893 P.2d 801, 803 (Ct. App. 1995) (citing *Matter of Permit No. 36-7200*, 121 Idaho 819, 823, 828 P.2d 848, 852 (1992)).
[20] *Id.*
[21] *Friends of Farm to Market*, 137 Idaho at 197, 46 P.3d at 14.
[22] MCC 2.1.040; MCC 2.1.010.
[23] MCC 2.1.050
[24] I.C. § 39-4105(4).
[25] MCC 2.1.060.

function, use, or purpose above the ground. Fill material placed in a floodplain for the specific purpose of removing a portion of real property from the special flood hazard area is not a Title II structure. Rather, it is simply piles of dirt. Although a Title II structure may someday be constructed or erected on top of the fill material, that does not transform the fill material into a structure. Unlike the list of things that are structures, which are located on the ground, the very purpose of the fill material is to create the ground. In any event, if the fill material is deemed a structure, then anyone who erects raised garden beds, builds a compost heap, or constructs a sandbox must obtain a building permit from the Building Department. That result creates an absurdity of statutory interpretation.

The Administrator's and P&Z's decision rely entirely on a finding that the "applicant has not received a building permit *as required* by McCall Code Section 3.8.02(G)." Although this section prohibits starting "*construction work*, including grading, blasting, filling, trenching, tree removal, etc." without a building permit, it does not define the activities for which a building permit is required. As just noted, a building permit is "a permit pursuant to Title II," which defines the activities requiring a building permit. According to the express terms of the McCall City Code, a building permit is *not* a permit pursuant to Title III. Indeed, construction work as defined by Title II's incorporation of the IBCA pertains to a building or something attached to a building. Therefore, McCall City Code unambiguously requires an applicant who is constructing or erecting "any building, residence or structure" to obtain a building permit—which may be subject to additional criteria depending on the location and type of structure—before beginning the construction work. Since FPDP-23-01's fill material is not any of these things, it does not require a building permit.

i. Other McCall City Code sections support this finding.

Similarly, other sections in Title III make clear that building permits are required "for structures" and not just "any development" activity occurring on real property. For example, the Shoreline and River Environs Zone ordinance requires certain criteria be met before "any development, grading or alteration of any land within this zone" occurs pursuant to a "building permit."[26] This does not mean that a building permit is required for "any development."[27] It means that a person seeking to build something requiring a building permit cannot start the construction work without a building permit.[28] The Scenic Route Zone ordinance operates the

[26] MCC 3.7.023(B).

[27] The "Requirements for Development" in the Shoreline and River Environs Zone arguable narrow the definition of development to development requiring design review under Title III, Chapter 16. The purpose of Title III, Chapter 16 "is to specify the process whereby *new construction and remodeling of structures*, landscaping, lighting, and public amenities are reviewed for compliance with development and design standards prescribed in title 3 'Planning and Zoning' and title 9 'Subdivision And Development Of The MCC.'" MCC 3.16.01.

[28] *See* MCC 3.7.021 ("If any portion of a *structure* lies within this zone, then the total *structure* shall be deemed to be within this zone."); MCC 3.7.022(B) ("[N]o *building* within an area of special flood hazard . . . unless the applicant complies with the standards set forth in" Title IX, Chapter 8); MCC 3.7.022(C) ("Any *structure*, wholly or partially within this zone . . . is subject to design review and approval under chapter 16 . . . notwithstanding that portions of the *structure* are not on land that is within this zone.")

same way. It requires additional scrutiny of activities subject to a building permit and prohibits site work and other construction work until the building permit is issued.[29]

As is relevant here, Title IX, Chapter 8 requires a floodplain development permit before commencing a "development activity," as that term is defined by Title IX, Chapter 8, within the special flood hazard area. It does not, like Title III, define when and for what activities a building permit is required.[30] Certainly, a structure proposed in the special flood hazard area requires both a floodplain development permit and a building permit. But that is a fundamentally different scenario than "development activity" that falls outside the purview of Title II. In fact, Title IX, Chapter 8 defines "development activity" as "[a]ny activity defined as development *which will necessitate a floodplain development permit*; such as: the construction of buildings, structures, or accessory structures; additions or substantial improvements to existing structures; . . . or the deposition or extraction of materials." This definition simply states that depositing materials in the special flood hazard area requires a flood plain development permit. It does define when or for which activities a building permit is required. That task is reserved for Title II. So, if development activity is placing fill upon wetlands in conjunction with constructing or erecting a structure, then yes, a building permit—including all other applicable criteria—would be required.

But here, there is no "construction, improvement, extension, alteration or demolition of any building, residence or structure" proposed in FPDP-23-01. The only activity is placing fill in aid of the CLOMR process pursuant to a Section 404 permit. Because the activity proposed in FPDP-23-01 does not fall under the purview of Title II, it does not require a building permit. The City Council should find that no building permit was required and reverse the Planning & Zoning Commission and Administrator on this issue.

B. The Shoreline and River Environs Zone Ordinance Does Not Apply to FPDP-23-01.

The Shoreline and River Environs Zone ordinance only applies to activities that require design review and a building permit or conditional use permit or both. The purpose of this zoning overlay is to "regulate development along and alterations of . . . the banks and immediate vicinity of the [North Fork] Payette River in order to protect and maintain water quality, fish and wildlife habitat, edge and forest habitat, vistas, and public visual and physical access."[31] In the Shoreline and River Environs Zone:

> All those uses permitted in the underlying zones upon which this zone is superimposed shall be permitted provided they satisfy the special conditions set

[29] MCC 3.7.032 ("A building permit shall neither be issued, nor any such work or construction undertaken, until approval of the site plan and design approval of proposed *structures*.")
[30] Indeed, MCC 9.8.02 states that "[b]uilding permits and/or floodplain development permits cannot be issued on a CLOMR, because the CLOMR does not change the NFIP map." This definition, which clarifies the effect of a CLOMR, makes sense because building a structure in the special flood hazard area without raising the base flood elevation would negate other requirements in Title IX, Chapter 8, such as dictating the type of materials that can used below the base flood elevation or flood protection elevation.
[31] MCC 3.7.020.

> forth in this chapter, *except that . . . No building and no land filling shall be permitted within a floodway and no building within an area of special flood hazard* . . . unless the applicant complies with the standards set forth in" Title IX, Chapter 8.[32]

This just stands for the unremarkable proposition that a floodplain development permit is required prior to "building" in the special flood hazard area, which is already a requirement of Title IX, Chapter 8, and that such building must comply with the zone's special conditions. It also makes clear that two different types of activity are prohibited in the floodway: building and filling.

However, that the Shoreline and River Environs Zone makes "design review . . . required for all development . . . as provided for in chapter 16 of" Title III evinces a legislative intent that the ordinance only applies to structures.[33] This is confirmed by MCC 3.7.022(C), which makes "[a]ny structure, wholly or partially in this zone . . . and any part of which is within the one hundred-fifty foot (150') land strip" subject to design review, and confirmed by MCC 3.16.02, which applies "[t]he design review process . . . to all new construction and remodeling of structures," and specifically "any structure which is . . . within the Shoreline and River Environs Overlay Zone."[34] Structure is defined in Title III exactly the same way as Title II.[35] Thus, the Shoreline and River Environ Zone applies where the permit criteria requires a building permit—that is, where the applicant proposes to construct or erect a structure falling within the purview of Title II.[36]

Here, FPDP-23-01 does not trigger the Shoreline and River Environs Zone ordinance's permit criteria. There is no proposed construction or erection of buildings or structures that require a building permit, and the activity does not necessitate a conditional use permit. Relying on the specific activities ("development, grading, or alteration of any land") following the words "nor is any" in MCC 3.7.023(B) as defining the activity that triggers the Shoreline and River Environs Zone ordinance is incorrect because it ignores the critically important first part of the sentence. That part specifically limits what permits are subject to the Shoreline and River Environs Zone ordinance: building permits and conditional use permits. Applying the ordinance to an activity that requires neither type of permit unlawfully expands the City of McCall's authority to regulate activities under the ordinance. The McCall City Code cannot "hide elephants in mouse holes."[37] The Shoreline and River Environs Zone ordinance is an "overlay" zone. Although it does not define when and for what purposes a building permit is required, it certainly applies when a building permit is required. Since FPDP-23-01 proposes only to place

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[32] MCC 3.7.022(B).
[33] MCC 3.7.023(A); *see also* MCC 3.7.021 ("If any portion of a structure lies within this zone, then the total structure shall be deemed to be within this zone.").
[34] MCC 3.16.01(8).
[35] *Compare* MCC 3.2.02 *with* MCC 2.1.060.
[36] MCC 3.7.023(B).
[37] *Whitman v. American Trucking Ass'ns*, 531 U.S. 457, 468 (2001) (Scalia, J.).

fill material in jurisdictional wetlands pursuant to a Section 404 permit and in aid of the CLOMR application process, no building permit is required. Therefore, the Shoreline and River Environs ordinance does not apply.

The abrogation clause in MCC 9.8.035 does not change this result. Although Title IX, Chapter 8 ensures "the necessity of compliance with any other laws, ordinances, [and] regulations," because the Shoreline and River Environs Zone ordinance is inapplicable to the activity proposed in FPDP-23-01, there is no "conflict or overlap" where "more stringent or greater conditions shall control."

FPDP-23-01 does not require a building permit nor is it subject to the Shoreline and River Environs Zone ordinance. The only necessary local permit is a floodplain development permit, which was denied because the administrator and P&Z erroneously applied additional but inapplicable provisions of the McCall City Code. That was wrong. Because FPDP-23-01 met all applicable criteria in Title IX, Chapter 8, the appeal must be granted, and the permit approved.

C. Unconditionally Defining FPDP-23-01 Proposed Activity as Harm Is Unreasonable.

As explained above, a building permit is not required for the proposed activity in FPDP-23-01, nor does the Shoreline and River Environs Zone ordinance apply to that activity. Without in any way waiving these arguments, even if a building permit is required and the Shoreline and River Environs Zone ordinance is found to apply, the conclusion that FPDP-23-01's proposed placement of fill material in jurisdiction wetlands constitutes "harm" is not just unreasonable but has zero support from the record below. Therefore, a building permit must be issued because the activity proposed in in FPDP-23-01 complies with Title III and Title IX.[38]

Unconditionally defining the placement of fill material in jurisdictional wetlands as "harm" renders other requirements in the McCall City Code meaningless. For example, it ignores the Shoreline and River Environs Zone ordinance's "Permit Criteria" requiring either a letter certifying "that no wetlands related issues or issues related to fill of navigable waters were presented by the proposed development; ***or*** that a section 404 permit has been issued or is forthcoming by the corps of engineers, whichever is appropriate"[39] [Emphasis Added]. And it ignores the fact that if the fill material is placed in jurisdictional wetlands pursuant to a Section 404 permit, the "proposed development meets all applicable requirements" of Title III and Title IX.[40] Indeed, both Titles acknowledge that where jurisdictional wetlands exist, compliance with federal law and regulations is necessary to prevent "harm," as that term is defined by MCC 3.7.023(C)2, when fill material is placed in jurisdictional wetlands.

Accordingly, the activity proposed in FPDP-23-01 will not "harm" jurisdictional wetlands because the Sanders must comply with all terms and conditions of the Section 404

[38] MCC 2.2.030(A); *see also* MCC 2.2.040.
[39] MCC 3.7.023(B)3 (emphasis supplied).
[40] *Id.*

permit. Interpreting McCall City Code otherwise renders MCC 3.7.023(B)(3) superfluous, effectively reading the phrase "city approval(s) under this title and title IX of this code contingent upon all applicable section 404 permit requirements being met" out of the ordinance. If the City can simply deny a floodplain development permit application for fill or a building permit to construct or erect a structure in the special flood hazard—activities clearly permitted under the Shoreline and River Environs Zone ordinance—even if all applicable local, State, and Federal permit requirements are met, this section of Code is just a Trojan Horse. First, the ordinance swoons well-meaning property owners who seek to develop their property in compliance with federal law to apply for such permits.[41] Then, the City of McCall collaterally attacks them by the denying a permit that in all respects complies with federal and state law—just as the ordinance requires.

P&Z's decision, like the Administrator's, found harm based on three criteria listed in MCC 3.7.023(C)(2). However, each of these criteria is also an activity that is a "discharge" for purposes of the CWA—that is, McCall City Code defines "harm" in much the same way as the Code of Federal Regulations defines "discharge," which is an element of the activities requiring a permit under the Section 404 of the CWA.[42] Here, a Section 404 permit was required because the FPDP-23-01 proposes to discharge fill into 0.15-acres of jurisdictional wetlands. To offset the impact to and loss of jurisdictional wetlands, the permit requires establishing 0.3-acres of new wetlands on the Sanders' property, adjacent to the North Fork Payette River.[43] The permit also requires conditions imposed by the State of Idaho's 401 Water Quality Certificate to protect surface water quality. If these conditions, including the compensatory mitigation, are not followed, the permittee is subject to civil enforcement actions. Thus, it is illogical and completely unreasonable to find "harm" when the activity proposed in FPDP-23-01 is subject to such conditions that in all respect are imposed to mitigate for "harm."

Finally, not only is it ridiculous to find "harm" when an applicant holds a Section 404 permit but the determination leads to the unreasonably harsh result that no floodplain development permit seeking to place fill in jurisdictional wetlands in aid of a CLOMR Application can ever be obtained.[44] The logical outgrowth of the Administrator's and P&Z's decisions is that there is no possible way to remove property from the special flood hazard area in accordance with a legitimate and often used federal process—not to mention pursuant to a Section 404 permit—that assists property owners who just so happen to own low-lying property

[41] Both MCC 3.7.023(B)(3), which requires a Section 404 permit (or that one is at least "forthcoming") and MCC 9.8.043(A)(1)(g), which requires certification that all other local, State, and Federal permits have been received "*prior* to the issuance of a floodplain development permit," seem to indicate that Federal permits must be obtained before the local permits, if any. If that is so, then such Federal permits and the conditions placed upon them should at least inform the analysis of impacts resulting from proposed activities in the special flood hazard area.
[42] *See* 33 C.F.R. § 323.2; 33 U.S.C. § 1344(f).
[43] *See* attached Exhibits A and B.
[44] Critically, the wetlands impacted by FPDP-23-01 are jurisdictional wetlands.

subject to an increased risk of flooding. This flies in the face of the McCall City Code's plain language, which clearly outlines a process for property owners in this situation to follow.

D. There is No Evidence of "Harm" in the Record Made Below.

The record contains no evidence that the proposed placement of fill would "harm" wetlands.[45] While P&Z's decision reiterates the language in MCC 3.7.03(C)2 as the basis for denying FPDP-23-01, it fails to elaborate on how it reached these conclusions other than to claim reliance on "Application materials, including detailed proposed construction drawings and plans; Testimony from the Applicant and the Applicant's Attorney; and Staff testimony by Brian Parker, City Planner."

A review of the record indicates that the only evidence provided by the City to support a finding of harm are two statements by the City Planner that "the filling of lake bottom of wetlands" is unequivocally harm and that "since they have not included what sort of building they would like to do, and are just purely placing fill, any placement of fill or modification of natural vegetation would be excessive because they are not proposing any sort of development."[46] The City Planner then concluded "that is the extent of the reasoning" for finding "harm."[47]

These justifications are wholly unsupported by the record below. First, the claim that modification of natural vegetation would be excessive because no development is proposed simply begs the question: Does McCall City Code categorically prohibit issuing a flood development permit to place fill—whether or not wetlands are present—in aid of the CLOMR process? True, in this application the Sanders are not proposing to construct or erect any structures, but the modification of natural vegetation is not excessive because it is necessary to remove a portion their property from the special flood hazard area to complete the CLOMR and eventually LOMR process. Nor can there be "excessive clearing" because the Sanders Section 404 permit contains a mandatory condition (Special Condition 1) to enhance and establish 0.30-acres of wetlands on the property.[48] There is simply no basis whatsoever to find activity proposed in FPDP-23-01 will cause "harm" under MCC 3.7.023(C)(2)(b).

Second, finding "harm" under MCC 3.7.023(C)(2)(c) and (d) is belied by the evidence in the record below. For starters, the Sanders provided a thirty-three-page expert report developed

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[45] *See Spencer v. Kootenai Cnty.,* 145 Idaho 448, 456 (2008) ("Substantial and competent evidence is less than a preponderance of the evidence, but more than a mere scintilla.")
[46] *McCall Area Planning & Zoning*, at 2:05:10 to 2:06:06, YOUTUBE (Sept. 12, 2023) https://www.youtube.com/watch?v=Q49Um0A-IZo.
[47] *Id.* at 2:06:07 to 2:06:10.
[48] City Staff claims that the MCC 3.8.23(D) prohibits the issuance of building permit because "an appropriate amount of site grading cannot be identified." That reasoning makes no sense. The appropriate amount of site grading is the amount necessary to elevate 0.48-acres of the Sanders Property above the special flood hazard area—which is precisely what is applied for in FPDP-23-01. In any event, the amount of "site grading" is easily ascertainable: it is no more than is necessary to complete activity necessary to achieve the purposes of applying for FPDP-23-01.

by Forsgren Associates, Inc. to analyze the extent of potential harm and outline measures to minimize any environmental harm that could be posed by the placement of the fill on the Property. The report notes that protection of water quality is (or would be) addressed in the conditions of the Section 404 permit and that by implementing best management practices (BMPs), FPDP-23-01 would presumptively comply with state water quality standards, including Idaho's Antidegradation Policy, by maintaining and supporting the beneficial uses designated for the section of the North Fork Payette River that runs adjacent to the Property. The report also found that the proposed BMPs would protect adjacent wetlands that would remain undisturbed and prevent impermissible runoff from occurring.

Furthermore, the Section 404 permit itself is substantial evidence that no "harm" will occur. Unconditionally finding harm just because there is removal, burial or destruction of other features in the vicinity of the highwater mark and filling jurisdictional wetlands is unreasonable when the McCall City Code recognizes certain means—this exact Section 404 permit—that will mitigate for impacts to jurisdictional wetlands. As explained above, MCC 3.7.023(C)(2)'s definition of "harm" is nearly identical to the activities that may be conducted pursuant to a Section 404 permit, which not only allows for the fill to be placed in jurisdictional wetlands but also imposes conditions on activities conducted before, during, and after placement of such fill. To mitigate for the impacts to 0.15-acres of Palustrine Scrub/Shrub ("PSS") wetlands, the Sanders' Section 404 permit requires establishing 0.30-acres of PSS wetlands on their property. Additionally, the Sanders must submit annual monitoring reports "following construction for a period of three years or until the Corps has determined the mitigation site has met its performance standards as described in the Mitigation Plan." These conditions and requirements far exceed the "extent of the reasoning" provided by the City Planner, and therefore the record establishes that no "harm" will be caused by FPDP-23-01.

E. As Applied to FPDP-23-01, MCC 3.7.023(C) Violates Idaho Law.

The Administrator's and P&Z's finding of "harm" is void as a matter of law. Idaho Code §39-3601 prohibits imposing requirements "beyond those of the federal clean water act" on discharges of pollutants into waters of the United States. Even though FPDP-23-01 is subject to the conditions of a Section 404 permit, its denial is based solely on the Administrator and P&Z assumption that the proposed activities will create "harm" to jurisdictional wetlands. This is the functional equivalent of the City of McCall determining that the conditions imposed by the Sanders' Section 404 permit, including compliance with Idaho's Section 401 Water Quality Certification are inadequate to protect jurisdictional wetlands. Consequently, the McCall City Code unlawfully imposes requirements on placing fill into jurisdictional wetlands that are *beyond those* of the federal CWA.

The CWA sets a national floor for regulating water pollution below which "States or political subdivisions thereof" cannot go.[49] The CWA does not restrict States from allocating

[49] 33 U.S.C. § 1370.

water resources within their boundaries nor from regulating land use within their boundaries even if the areas regulated are also subject to CWA jurisdiction.[50] Although States and political subdivisions are prohibited from adopting or enforcing standards or limitations respecting the "discharge of pollutants" (as that term is defined in 33 U.S.C. § 1362) into waters of the United States that are "less stringent than" the CWA, they are free to impose more onerous standards subject to the limitations of state law and federal law.[51]

In Idaho, there are two limits on the power of a local government to impose more stringent standards than the CWA prescribes: express and implied preemption under the state constitution and Idaho Code § 50-301.

1. Express preemption applies meaning the State law expressly prohibits the city from regulating discharges subject to the CWA more stringently than the requirements of the CWA.

Article XII, § 2 of the Idaho Constitution permits an incorporated city or town to "make and enforce within its limits, all such local police, sanitary and other regulations *as are not in conflict with its charter or with the general laws*."[52] Similarly, Idaho Code § 50-301 allows cities to "exercise all powers and perform all functions of local self-government in city affairs as are not specifically prohibited by or in conflict with the general laws or the constitution of the state of Idaho." While a city's "ability to act is *not* confined to only those actions specifically mentioned in LLUPA," such ability is constrained when the legislature says so.[53]

With respect to the CWA, Idaho Code § 39-3601 is a general law that expressly prohibits local governments from imposing more stringent conditions on waters of the United States than what is required by the CWA:

> It is the intent of the legislature that the state of Idaho fully meet the goals and requirements of the federal clean water act and that the rules promulgated under this chapter not impose requirements beyond those of the federal clean water act.[54]

When the City of McCall increases the regulatory burden on jurisdictional wetlands beyond those required by the CWA, such as in this case and finding "harm" for the activity proposed in FPDP-23-01, it renders the City's action "in conflict with . . . the general laws" of the state of Idaho. Stated another way, jurisdictional wetlands are a subset of wetlands in the State of Idaho that must be regulated no more and certainly no less than the requirements of federal law. Although the City of McCall may categorically prohibit development activities in non-jurisdictional wetlands—subject to state and federal constitutional limitations—state law

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[50] *Id.*; *see also Prosolino v. Nastri*, 291 F.3d 1123, 1140 (9th Cir. 2002).
[51] 33 U.S.C. § 1370.
[52] IDAHO CONST. art. XII, § 2.
[53] *Cisek v. Kootenai Cnty. Bd. of Comm'rs*, 254 P.3d 24, 32-33 (Idaho 2011).
[54] I.C. § 39-3601.

dictates that the City of McCall cannot more stringently regulate or impose requirements on jurisdictional wetlands beyond those of the federal CWA.

In addition, Section 401 of the CWA inserts State authority with respect to jurisdictional wetlands by allowing issuance of water quality certificates, which may include additional conditions designed to protect the surface water quality of state water bodies subject to regulation under the CWA. For example, in the Sanders NWP No. 29, Idaho water quality certification is contingent upon compliance with additional conditions specific to Idaho's Water Quality Standards promulgated under IDAPA 58.01.02, including the state's antidegradation policy. Under this policy, all water bodies subject to CWA jurisdiction receive, at a minimum, Tier I antidegradation protection.[55] For activities like those proposed in FPDP-23-01, all fill material must be clean and if there is any possibility the material may be contaminated, the permittee must apply the procedures in the Sediment Evaluation Framework for the Pacific Northwest.[56] If a permittee under a Nationwide Permit complies with the conditions set forth in the water quality certification, Idaho's water quality standards, including the narrative sediment criteria and turbidity criteria will be met.

The unconditional finding of "harm" by the Administrator and P&Z completely ignores and in effect imposes additional requirements on federal and state conditions designed to protect jurisdictional wetlands and state water quality standards. These requirements, which are beyond those of the federal CWA, are expressly preempted by Idaho Code § 39-3601. Therefore, under both Article XII, § 2 and Idaho Code § 50-301, the City of McCall's action denying FPDP-23-01 on the basis that it will create "harm" to wetlands is beyond its powers (*ultra vires)* because the legislature has limited the extent that regulations may exceed the requirements of the CWA.[57]

2. Even if the City of McCall is not expressly preempted, it is impliedly preempted from regulating more stringently than what is required by the CWA.

The doctrine of implied preemption is a principle of long-standing in the State of Idaho. It derives from the language in Article XII, § 2 that limits the police power of local governments to making and enforcing laws that are not in conflict with laws enacted by the legislature and arises when the legislature "intend[s] to occupy the whole field" of regulation.[58]

Implied preemption occurs where, despite the lack of specific language preempting or empowering local government regulation, "the state has acted in the area in such a pervasive manner that it must be assumed that it intended to occupy the entire field of regulation."[59] Intent

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[55] *See* IDAPA 58.01.02.052.01

[56] NORTHWEST REGIONAL SEDIMENT EVALUATION TEAM (RSET), SEDIMENT EVALUATION FRAMEWORK FOR THE PACIFIC NORTHWEST (2018), https://www.epa.gov/sites/default/files/2016-07/documents/sediment_evaluation_framework_for_the_pacific_northwest_2016.pdf.

[57] *See Black v. Young*, 122 Idaho 302, 308-09, 834 P.2d 304, 310-11 (1992).

[58] *See, e.g.*, *Clyde Hess Distributing Co. v. Bonneville Cnty.*, 69 Idaho 505, 510, 210 P.2d 798, 800 (1949); *Caesar v. State*, 101 Idaho 158, 161 610 P.2d 517, 520 (1980).

[59] *Envirosafe Services of Idaho, Inc. v. Owyhee Cnty.*, 112 Idaho 687, 690, 735 P.2d 998, 1001 (Idaho 1987)

may be assumed where 1) state law indicates the subject matter is to be "regulated by means of one, uniform statewide scheme enabling the state to enter into meaningful interstate agreements," or 2) the laws regulating the subject matter are a "comprehensive statutory scheme" that "demands a statewide, rather than local approach."[60] Even if the ordinance and statute are identical, "it is obvious that the field sought to be covered by the ordinance has already been occupied by the state legislation."[61]

The City of McCall is impliedly preempted from more stringently regulating activities of property owners that are otherwise subject to (*i.e.*, in the same field as) the permitting requirements of the CWA. Title 39 of the Idaho Code is a comprehensive legislative scheme implementing, among other things, Idaho's obligations and duties under the CWA. The law is clear that subject matter falling under the purview of the CWA is to be regulated to "avoid the existence of duplicative, overlapping or conflicting state and federal regulatory systems."[62] Importantly, Title 39, Chapter 36 provides how the State of Idaho implements water quality standards with respect to waters of the United States within its borders: "If supported by the permit record, the department may also presume that discharges authorized under a general permit are insignificant or that the pollution controls required in the general permit are the least degrading alternative specified in the department's rules."[63] Thus, the legislature intends for a uniform, statewide procedure ensures general permits, like the Sanders Section 404 permit, are adequate to protect water quality and not hijacked by local ordinances.

Furthermore, when the City of McCall imposes more stringent conditions on a property owner whose activity is otherwise subject to the requirements of the CWA, it impairs the State of Idaho's ability to manage and enforce State water quality standards in a comprehensive and statewide manner. The reason is not because banning otherwise regulated activities in waters of the United States leads to better environmental outcomes, but because conditions on such regulated activities that are designed to mitigate and offset impacts, which lead to better environmental outcomes, are required to be applied evenly and consistently throughout Idaho. The legislature clearly intends that for discharges into waters of the United States, federal, not local, law sets the limits because it has determined that such is the policy of the State of Idaho. Therefore, the City of McCall is impliedly preempted from more stringently regulating and thus denying FPDP-23-01, the activities in which proposed are permitted pursuant to Section 404 permit.

Because both the state constitution and state law prohibit the City of McCall from imposing requirements beyond those of the federal CWA, denying FPDP-23-01 on the basis that it will create "harm" to jurisdictional wetlands violates both constitutional and statutory provisions.

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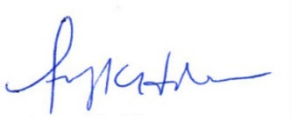
[60] *Id.*
[61] *Id.* at 691, 735 P.2d at 1002.
[62] I.C. § 39-175B.
[63] I.C. § 39-3603(2)(a).

VI.
CONCLUSION

For the foregoing reasons, the Sanders respectfully request that the McCall City Council **REVERSE** the McCall Planning and Zoning Commission's decision and **GRANT** FPDP-23-01.

Respectfully submitted,



Amy Holm
Steven J. Millemann
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WETLAND MITIGATION PLAN

Sanders Property

Rivers Crossing Subdivision – Lot 19

October 17, 2023

Prepared by:

James Fronk LA – Certified Delineator

James Fronk Consulting, LLC.

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Wetland Mitigation Plan

October 17, 2023

Located in a portion of
S 1/2 of Section 17, T8N., R.3E., B.M,
221 Morgan Drive, McCall, Idaho 83638
Valley County, Idaho.

TABLE OF CONTENTS:

1.0 Introduction

James Fronk Consulting, LLC. was retained by Dwain and Cindy Sanders to prepare an amended Joint Application for Permit and mitigation plan for impacts to wetlands on the private property of the applicant.

The project site is approximately 5.29 acres in size and includes approximately 1.97 acres of palustrine emergent wetland (PEM), and 0.54 acres Palustrine Scrub/Shrub wetland (PSS), and 0.19 acres of Deciduous/Forest wetlands. The property is located on 221 Morgan Drive, McCall, Idaho and is in the SE ¼ NW ¼ of Section 7, Township 17 N, Range 4E (Figure 1, Vicinity Map). The mitigation site is in the center of the property as shown on Figure 2, Mitigation Plan.

1.1 Wetland Alternative Analysis

Wetland impact avoidance and minimization was carefully considered during the project planning and design. This project planning reduced the proposed wetland impacts to 0.15 acres. The ability to avoid wetland impacts has been considered. However, the buildable site area is too small to construct a realistic sized single-family residence and detached shop/living quarters. The detached shop/living quarters is a necessary component to the plan. The detached living quarter is required to house a young adult with learning disabilities. Considerable effort has been made by the applicant with the Architect and Land Planner to minimize the wetland impacts to 0.15 acres on a 5.29-acre lot with a delineated wetland area of 2.7 acres. The wetland impact avoidance measures include consultation of fill impacts adjacent to existing uplands area by the front of Lot 19. Additional measures to avoid wetland impacts on Lot 19 include the construction of a driveway bridge over a wetland area, helical screw construction of patio decks, walkways, and gazebo platform. The construction of the bridge and other raised platforms will be a minimum of 2 ft. above the delineated wetland areas natural ground.

2.0 Objectives

Wetland mitigation will provide for replacement of 0.15 acres Palustrine Scrub/Shrub (PSS) wetlands that will be impacted by fill as identified in the Joint Application for Permit (Attached). The proposed mitigation areas will consist of construction of 0.30 acres (2 to 1 Replacement Value) of Palustrine Scrub/Shrub (PSS) wetlands that will be constructed onsite with the specific purpose of replacing the impacted wetland from created by the construction of the proposed residential building. Other wetland mitigation objectives of the selected mitigation site will expand, spread, and increase the vegetative diversity, ecological diversity, wildlife habitat and water quality, in the mitigation areas.

Specific mitigation objectives are described in the following subsections.

2.1 Wildlife

The placement and location of mitigation areas with Palustrine Scrub/Shrub (PSS) wetlands will improve vegetative diversity and will provide a number of benefits to wildlife including the planting of flowering shrubs which will provide food and cover for birds, bees, and terrestrial species such as rabbits deer, and mice as well as avian predators such as hawks and owls. This will in turn provide opportunities for terrestrial predators such as foxes and coyotes. Selective

plantings of native shrubs will also enhance cover corridors for wildlife movement between areas of cover and open water areas.

2.2 Water Quality

The selected mitigation areas will enhance the water quality in the open meadow area by replacing the impacted Palustrine Scrub/Shrub (PSS) wetlands with an area closer to the North Fork of the Payette River. The placement of the mitigation will allow for additional nutrients and pollutant removal.

3.0 Site Selection Criteria

The areas selected for this wetland mitigation is driven by the requirement to meet mitigation goals and improving and creating additional habitat for wildlife and enhancing water quality. The proposed mitigation area (Area 1 - 0.10 acres) is located adjacent to a natural swale that consists of existing wet meadow (PEM) wetlands. In addition, an adjacent lower elevation area (Area 2 – 0.20 acres) is also adjoining to existing wet meadow (PEM) wetlands. The mitigation areas selection has a high potential for successful mitigation by enhancing and diversifying vegetative species. The mitigation area's location can be minimally excavated to replicate the adjacent drainage swale to provide the necessary hydrology (ground water) that currently exists. The mitigation areas selection also allows for an opportunity to create PSS wetlands adjacent to PEM wetlands that currently exist. The mitigation areas were chosen for mitigation replacement because of their location directly adjacent to a natural swale and lower ground areas, and groundwater availability: therefore, has the greatest potential to off-set the impacts of the proposed action. This area is under the direct control of the applicant/owner for a USACE permit. The mitigation area will occur in the center of the property to ensure future compliance and protection. (See Figure 2).

4.0 Site Protection Instruments

Long term protection will be a note on the Record of Survey stating, "Compensatory Mitigation Site associated with the Department of Army Permit DA No. NWW-No 2020-00422 – B03."

This site protection instrument will protect the mitigation area. The mitigation area will be maintained for the protection and enhancement of wildlife -habitat, riparian functions and values, and water quality. Maintenance and preservation of the protected area shall be the responsibility of the property owner. The property owner will operate under the following guidelines:

(1) No structures shall be placed on the protected area, except structures necessary to protect and enhance wildlife habitat, riparian functions and values and water quality. Helical screw supported bridges involving no fills into waters of the United States will also be allowed for additional mitigation measures outlined in the Joint Permit for Application.

(2) The property owners shall maintain the vegetative cover within the protected area in as natural a condition as practicable and shall plant only native or native-compatible vegetative species in the protected area.

(3) All restrictions and conditions contained in any Permit issued by the Army Corps of Engineers related to the protected area shall be strictly enforced by the property owners.

5.0 Baseline Information

As part of a detailed monitoring plan for mitigation, a baseline will be established to provide information on proposed plant species, soil types, and hydrology. Observation includes the following.

5.1 Soils

The United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) has identified the majority of soils within the wetland area of the site as Jurvannah sandy loam, a very deep, poorly drained soil that is listed as a hydric on the NRCS Hydric Soils List with inclusions of Blackwell clay loam also on NRCS Hydric List (see Figure 3).

5.2 Plants

Existing vegetative species observed across the wet meadow area and where the mitigation site areas will be placed include, but are not limited to those listed in the following table:

Scientific Name	Common Name
Achillea millefolium	Common Yarrow
Aster occidnetalis	Aster species
Juncus balticus	Rush species
Phleum pratense	Timothy
Poa annua	Annual Bluegrass
Rumex acetosella	Sorrel species
Salix lasiolepis	Willow species
Carex nebrascensis	Sedge Species
Centaurea stoebe	Spotted knapweed
Populus tremula	Aspen Species
Phalaris arundinacea	Reed Canary Grass
Festuca rubra	Red Fescue
Veratrum californicum	Skunk Cabbage
Thermopsis montana	False Lupin
Heracleum sphondylium	Cow Parsnip
Epilobium ciliatum	Fringed Willowherb

Mitigation Areas Plant Species:

Scientific Name	Common Name
Salix lasiolepis	Willow species
Juncus balticus	Rush species
Potentilla gracilis	Northwest Cinquefoil
Poa annua	Annual Bluegrass
Juncus balticus	Rush species
Carex nebrascensis	Sedge Species
Asclepias specious Tarr.	Showy Milkweed

Note: The Mitigation Areas Plant Species that will be planted for the mitigation areas will also consist of milk weed and flowering plant material (to be determined).

5.3 Hydrology

The proposed mitigation areas will consist primarily of Palustrine Scrub/Shrub (PSS) wetlands supplied by spring snow runoff associated with the Payette River and onsite groundwater. The area is topographically relatively flat with the water table near the surface and saturation at or near the surface during spring flows.

6.0 Credit Determination Methodology

The applicant and James Fronk Consulting, LLC is proposing a 2:1 wetland replacement ratio. The 0.30 -acre mitigation areas located in the center of the property will be a Palustrine Scrub/Shrub (PSS) wetland.

7.0 Mitigation Work Plan

The wetland mitigation replacement areas will be 0.30 acres located in the center of the property. Starting in the spring/summer of 2024. Field verification of existing natural ground elevations in the proposed mitigation areas will be conducted. The higher elevation areas encountered within the proposed mitigation areas may be lowered approximately 9 inches of soil material and or matching the existing elevation of the adjacent existing wetlands areas. (See notes on Figure 2 for identified wetland areas highlighted in red). The soil material removed will be located under the existing topsoil and vegetation layer. The existing topsoil material will be pushed aside to remove approximately 9 inches of soil, after which the vegetative layer of topsoil will be returned and will reflect elevation characteristics of existing delineated PSS areas on site. This will also facilitate groundwater and surface flow to this area. (Final field elevation will be determined by James Fronk Consulting, LLC.) The elimination if needed of approximately 9 inches of soil material will be removed to a higher upland area.

The wetland mitigation areas will consist of native willow (Salix species at 80 percent), and (Emergent wetland species at 20 percent) with native emergent wetland species as indicated in the above Mitigation Areas Plant Species table. Native willow sprigs will be collected on site and will be propagated in the mitigation areas to create wetlands Palustrine Scrub/Shrub (PSS). The intent of the planting plan is to cover 80 percent of the mitigation area with shrub/scrub species and 20 percent of the mitigation area with emergent wetlands species listed above for plant diversity. The intent of the propagated species planting plan is to install the shrub/scrub plantings in clusters with the following approximate sprig material count:

Native willow (Salix species at 80 percent) – 800 sprig plantings

Collection of native topsoil from impacted area will also be used to supplement the mitigation area with the existing Forbes, seeds, and plant material.

8.0 Maintenance Plan

The mitigation areas will include a maintenance plan to promote the establishment of viable plant populations and will be regularly checked monthly for the first growing season and quarterly thereafter to ensure mitigation is successful. Monitoring reports will be collected annually (see Section 9 below), and mitigation will be adjusted as needed.

9.0 Ecological Performance Standards

Wetland mitigation will be considered successful when the following is met:

Scrub/Shrub (PSS) presence in the mitigated area has a total of sixty percent (60%) successful plant distribution with approximate percentages of healthy plant species of native willow, and emergent wetland plant material, as identified in section 7.0.

10.0 Monitoring Requirements

- Monitor the established Assessment Area for three consecutive years. Monitoring will record the amount of area, growth, and plant health for the scrub/shrub and emergent wetland areas.
- Results of monitoring will be compiled into a report which will be submitted to USACE no later than December 31 annually.
- The mitigation plan will be considered complete when the performance standards have been met.
- If the performance standards are not met after the three-year period, an assessment of the mitigation plan will be reviewed and evaluated for different implementation wetland enhancement techniques and methods.

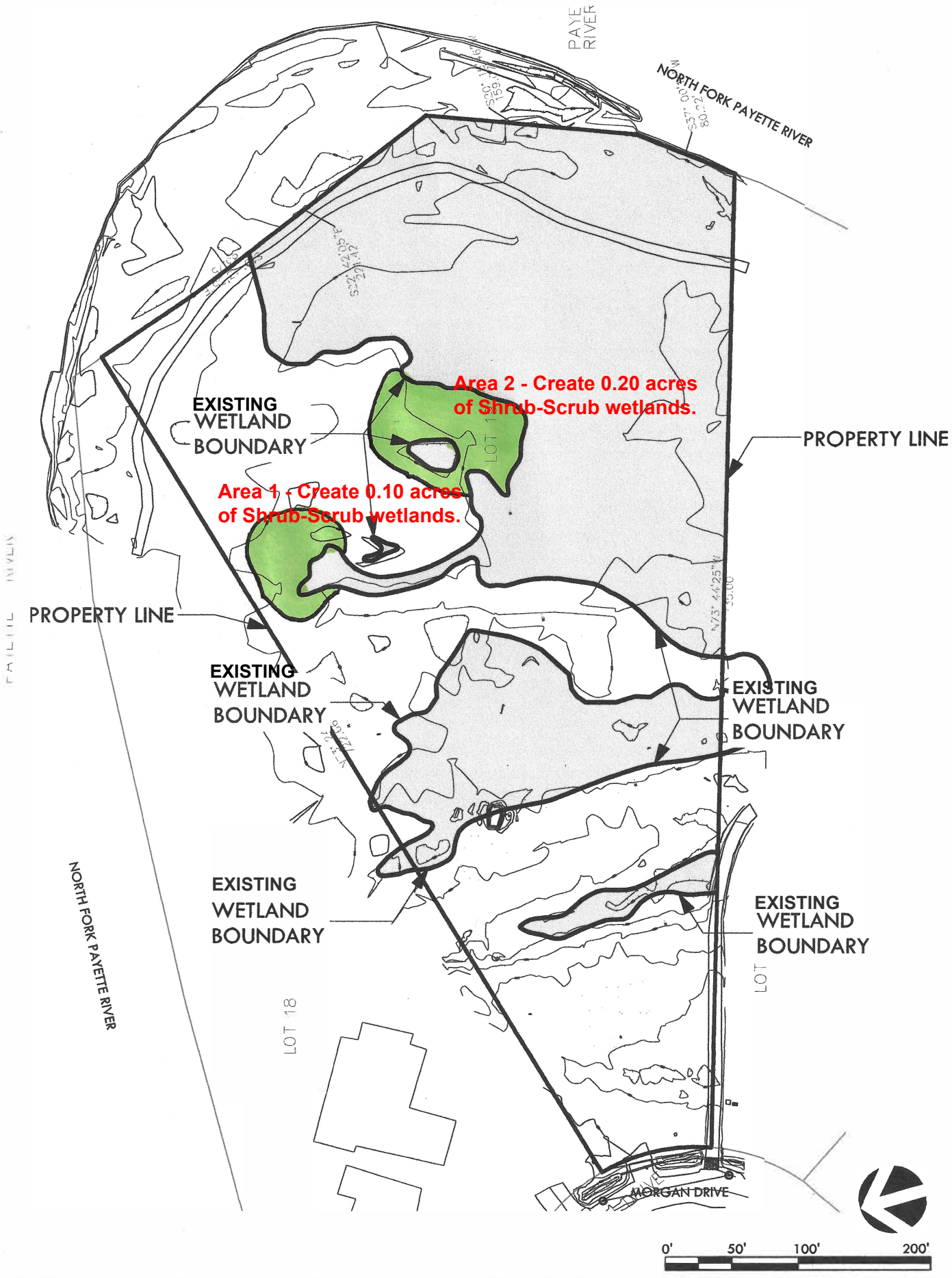
11.0 Long Term Management Plan

- The owner owns the parcel with wetland mitigation.
- The Owner will maintain and monitor wetland mitigation area for the long term.
- If the Owner sells the permitted property to another entity, the USACE permit responsibility will be transferred to the new ownership entity and will be part of the sales contract.

12.0 Adaptive Management Plan

Considering the size and scope of this proposed mitigation, the maintenance plan described in Section 8 above should be sufficient to address any unforeseen issues with achieving the performance standards.

13.0 Other Information: N/A



BIMcloud: s132-148-167-156 - BIMcloud Basic for ARCHICAD 23/SANDERS RIVER CROSSING

JAMES FRONK CONSULTING, LLC. 14028 NORWOOD RD PO BOX 576 McCALL, ID 83638 (208) 634-8093	**Mitigation Site Plan** SANDERS RESIDENCE 221 MORGAN DRIVE MCCALL ID 83638 RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2	FIGURE: 2 DRAWN BY: JGF DATE: 10/14/2023

EXHIBIT A

City of McCall

Floodplain Development Permit Application for the City of McCall

OFFICE USE ONLY
Date Received:
Land Use
App Number:

SECTION I: Applicant and Project Information

GENERAL INFORMATION

1. No work of any kind may begin in a floodplain until a floodplain development permit is issued.
2. The permit may be revoked if any false statements are made in this application.
3. If revoked, all work must cease until a permit is re-issued.
4. The development may not be used or occupied until a Certificate of Compliance is issued.
5. The permit will expire if no work is commenced within 6 months of the date of issue.
6. The permit will not be issued until any other necessary local, state or federal permits have been obtained.

By signing and submitting this application, the Applicant gives consent to the local Floodplain Administrator or his/her representative to make reasonable inspections prior to the issuance of a Certificate of Compliance.

By signing and submitting this application, the Applicant certifies that all statements contained in SECTION I of the application, and in any additional attachments submitted by the Applicant, are true and accurate.

OWNER INFORMATION

Property Owner: Dwain and Cindy Sanders
McCall, ID 83638
Mailing Address: c/o Steve Millemann, PO Box 1066,

Telephone Number: _208-634-7641

Email Address: sjm@mpmplaw.com

Signature of Property Owner: D Sanders

Date: 1/23/23

APPLICANT INFORMATION

Applicant: __Same

Notes:

Telephone Number:

Fax Number:

Signature of Applicant: _Same

PROJECT INFORMATION

Project Address: ___221 Morgan Drive, MCCall, ID _

Subdivision: Rivers Crossing

Lot_19

Block:__2

Attach Legal Description to application.

PROJECT INFORMATION (continued)

Type of Structure: None proposed

- ☐ Residential (1 to 4 families)
- ☐ Residential (More than 4 families)
- ☐ Non-Residential
  - O Elevated
  - O Floodproofed (wet/dry)
- ☐ Combined Use (Residential and Non-Residential)
- ☐ Manufactured Home
- ☐ Located within a Manufactured Home Park
- ☐ Located outside a Manufactured Home Park

Type of Structural Activity: None proposed

- ☐ New Structure
- ☐ Addition to Existing Structure*
- ☐ Alteration of Existing Structure*
- ☐ Relocation of Existing Structure **
- ☐ Demolition of Existing Structure
- ☐ Replacement of Existing Structure

*** Substantial Improvement**
If the value of an addition or alteration to a structure equals or exceeds 50% of the value of the structure before the addition or alteration, the entire structure must be treated as new construction.

Substantial Improvement Evaluation:
Cost of Improvement (a): $ -

Market Value of the Building (b) : -

Percent of Value Change (a/b): _____ %

Disclaimer: Substantial Improvement Evaluation must be supported by project cost documentation and approved market evaluation. Attach supporting documentation.

**** Relocation or Replacement**
A relocated structure or a structure being replaced must be treated as new construction.

Other Development Activities (See attached Narrative)

- ☒ Excavation (not related to a structural development)
- ☐ Clearing
- ☒ Placement of Fill Material
- ☒ Grading
- ☐ Mining
- ☐ Drilling
- ☐ Dredging
- ☐ Watercourse alteration
- ☐ Drainage improvement (including culvert work)
- ☐ Individual water or sewer system (not included to a structural development listed above)
- ☐ Roadway or bridge construction
- ☐ Specify other development not listed above:

_____

PROPERTY OWNER SIGNATURE

Applicant: Please note that this application is often subject to engineering and legal review for purpose of addressing compliance and conformance issues. The City of McCall contracts these services to private firms and/or staff with hourly rates approved by City Council. The cost of these professional floodplain permit reviews are passed on to the applicant. These fees are separate and in addition to other land use application and permit fees.

Please initial that you are aware of these additional fees _____

I certify that to the best of my knowledge the information contained in the application is true and accurate.

Signature of Property Owner: _____ Date: 1/23/23

SECTION II: (To be completed by Floodplain Administrator)

FLOOD INFORMATION

1. The proposed development is located on FIRM map panel:_____ (number and suffix)
2. Effective date on the FIRM: _____
3. The proposed development is located in Zone _____ of the SFHA.
4. Is the proposed development located within the regulatory floodway: ☐ No ☐ Yes *(Attach Completed H&H Analysis for a No-Rise Certificate)*

Structural Development

For structures, the provisions of the flood ordinance specify that the lowest floor, including basement, crawlspace and utilities, be elevated to or above the flood protection elevation.

The Flood Protection Elevation for the proposed development is: _____

Base Flood Elevation: _____

Source of Base Flood Elevation: ☐ FIRM ☐ FIS or ☐ other: _____

The following documents are required:

- ☐ An Elevation Certificate *
- ☐ Site Plan (Showing location of SFHA and development)

The following documents may be required:

- ☐ Floodproofing Certificate * – required if floodproofing a non-residential structure
- ☐ A No-Rise Certificate * – if any of the proposed development is in a "regulatory floodway"
- ☐ An elevation study showing BFEs on developments/ subdivisions exceeding 50 lots or 5 acres in Zone A

** Certificates require completion by a Professional Land Surveyor or Registered Professional Engineer as indicated.*

SECTION III: (To be completed by Floodplain Administrator)

Permit Determination

I have determined that the proposed development:

☐ IS ☐ IS NOT (non-conformance described in separate document)

in conformance with the local Flood Damage Prevention Ordinance.

The Floodplain Development Permit:

☐ IS ☐ IS NOT (denials are described in separate document)

issued subject to any conditions attached to and made part of this permit.

_____ _____

Signature of Floodplain Administrator: Date:

SECTION IV: (To be completed by Floodplain Administrator)

Certificate of Compliance

Certificate of Compliance is issued and the development is found to be in compliance with all applicable ordinances.

_____ _____

Signature of Floodplain Administrator: Date:

This Certificate of Compliance indicates that structures may now be occupied, and non-structural developments may be utilized.

NARRATIVE IN SUPPORT OF

SANDERS FLOODPLAIN DEVELOPMENT APPLICATION

January 23, 2023

1. **Overview:**

The property which is the subject of this Application is Lot 19, Block 2 of the Rivers Crossing Subdivision (the "**Property**"). The Property is 5.29 acres, containing approximately 2.7 acres of delineated wetlands. The vast majority of the Property lies within the area designated by FEMA as the "Special Flood Hazard Area" (a.k.a. the "1% AEP inundation extent"). The project for which this application is filed involves the placement of fill in less than .5 acres of the portion of the Property which is located within the Special Flood Hazard Area.

The placement of the fill is a component of a "CLOMR" (Conditional Letter of Map Revision) Application which is pending with FEMA. These applications allow an owner to obtain a Floodplain map revision by raising the level of property to a level which removes it from the Special Flood Hazard Area. The CLOMR process is expressly recognized by the McCall City Code, at Section 9.8.042, A, 13.

The placement of the fill requires a Floodplain Development Permit under MCC 9.8 .043, because it is within the definition of a "Development Activity" under MCC 9.8.02. No other permits are required under the McCall City Code for the proposed placement of fill.

This Property was the subject of a variance application which was denied by the McCall City Council. That denial has not been appealed and further variances from the Shoreline and River Environs setback will not be sought by the Sanders. The placement of the minimal amount of fill for which the Floodplain Development Permit is sought will not allow the previously designed home to be built. It will modestly expand the buildable area on the Lot, without having any adverse environmental impacts, and allow for a re-designed home to comply with the 50 foot setback requirement of the Shoreline and River Environs Ordinance. It is believed that this is precisely the process which was followed on the lot immediately to the north of the Sanders Property.

2. **The Project**:

The activity for which the Permit is sought will be the placement of imported fill into .48 acres of the Property, of which .15 acres is delineated Shrub/Scrub wetlands. The area in which the fill will be placed is depicted in **Exhibit 1** (the "**Project Area**").

The Property Owners hold a Permit from the Army Corps of Engineers (issued pursuant to Section 404 of the Clean Water Act) to place fill in the .15 acre area, thereby impacting only 2.8% of the Lot and 5.5% of the delineated wetlands. The Permit is a "Nationwide Permit", which permits authorize "only activities with no more than minimal individual and cumulative adverse environmental effects." (See Army Corps of Engineers September 15, 2020 Proposal to Reissue and Modify Nationwide Permits).

The fill will raise the existing elevation of the Project Area to a minimum elevation matching the Base Flood Elevation (BFE) or higher. As the BFE within the Project Area varies, the proposed minimum fill elevation also varies as depicted in **Exhibits 2 and 3**. No fill will be placed within the designated Floodway. No fill will be placed in or will impact any existing watercourse. Erosion control methods will consist of installation of silt fencing around disturbed areas. The small amount of fill contemplated by this Application and the CLOMR Application will result in only a slight rise in the project area (<0.1-ft during the 100-yr flood event). The proposed inundation boundaries were computed in the hydraulic analysis documented in the CLOMR and compared to existing and found no significant difference in floodplain delineations within the project area or any upstream or downstream properties. The Application does not propose the placement or construction of any structures.

3. **The Floodplain Development Application Requirements** (M.C.C. 9.8.043):

The following are the Application requirements of the Ordinance (MCC 9.8 .043(A)(1)):

(a) A plot plan drawn to scale which shall include, but shall not be limited to, the following specific details of the proposed floodplain development:

(1) The nature, location, dimensions, and elevations of the area of development/disturbance; existing and proposed structures, utility systems, grading/pavement areas, fill materials, storage areas, drainage facilities, and other development.

Compliance: See Plot Plan attached hereto as Exhibit 1. There are no existing or proposed structures utility systems, or pavement contemplated by the Application.

(2) The boundary of the special flood hazard area as delineated on the FIRM or other flood map as determined in section 9.8.032 of this chapter, or a statement that the entire lot is within the special flood hazard area.

Compliance: See attached Exhibit 1.

(3) The flood zone(s) designation of the proposed development area as determined on the FIRM or other flood map as determined in section 9.8.032 of this chapter.

Compliance: The current flood zone designation for the Project Area is "1% AEP (100 yr) SFHA"" (see Exhibit 1).

(4) The boundary of the floodway(s) as determined in section 9.8.032 of this chapter,

Compliance: See Exhibit 1. The Project Area is not within or proximate to the Payette River Floodway.

(5) The base flood elevation (BFE) where provided as set forth in section 9.8.032, 9.8.033, or 9.8.053 of this chapter.

Compliance: See Exhibit 1.

(6) The old and new location of any watercourse that will be altered or relocated as a result of proposed development.

Compliance: The proposed activity will not alter, relocate or impact any existing watercourse.

(b) Proposed elevation, and method thereof, of all development within a special flood hazard area including but not limited to:

(1) Elevation in relation to mean sea level of the proposed lowest floor (including basement) of all structures.

Compliance: NA. No structures are proposed as part of this Application.

(2) Elevation in relation to mean sea level to which any non- residential structure in Zone A, AE, AH, AO, or A1-30 will be floodproofed.

Compliance: NA. No structures are proposed as part of this Application.

(3) Elevation in relation to mean sea level to which any proposed utility equipment and machinery will be elevated or floodproofed.

Compliance: NA. No such equipment is proposed as part of this Application.

(c) If floodproofing, a Floodproofing Certificate (FEMA Form 086-0-33) with supporting data, an operational plan, and an inspection and maintenance plan that include, but are not limited to, installation, exercise, and maintenance of floodproofing measures will be required prior to Certificate of Occupancy/Completion.

Compliance: NA

(d) Foundation Plan, drawn to scale, which shall include details of the proposed foundation system to ensure all provisions of this chapter are met.

Compliance: NA

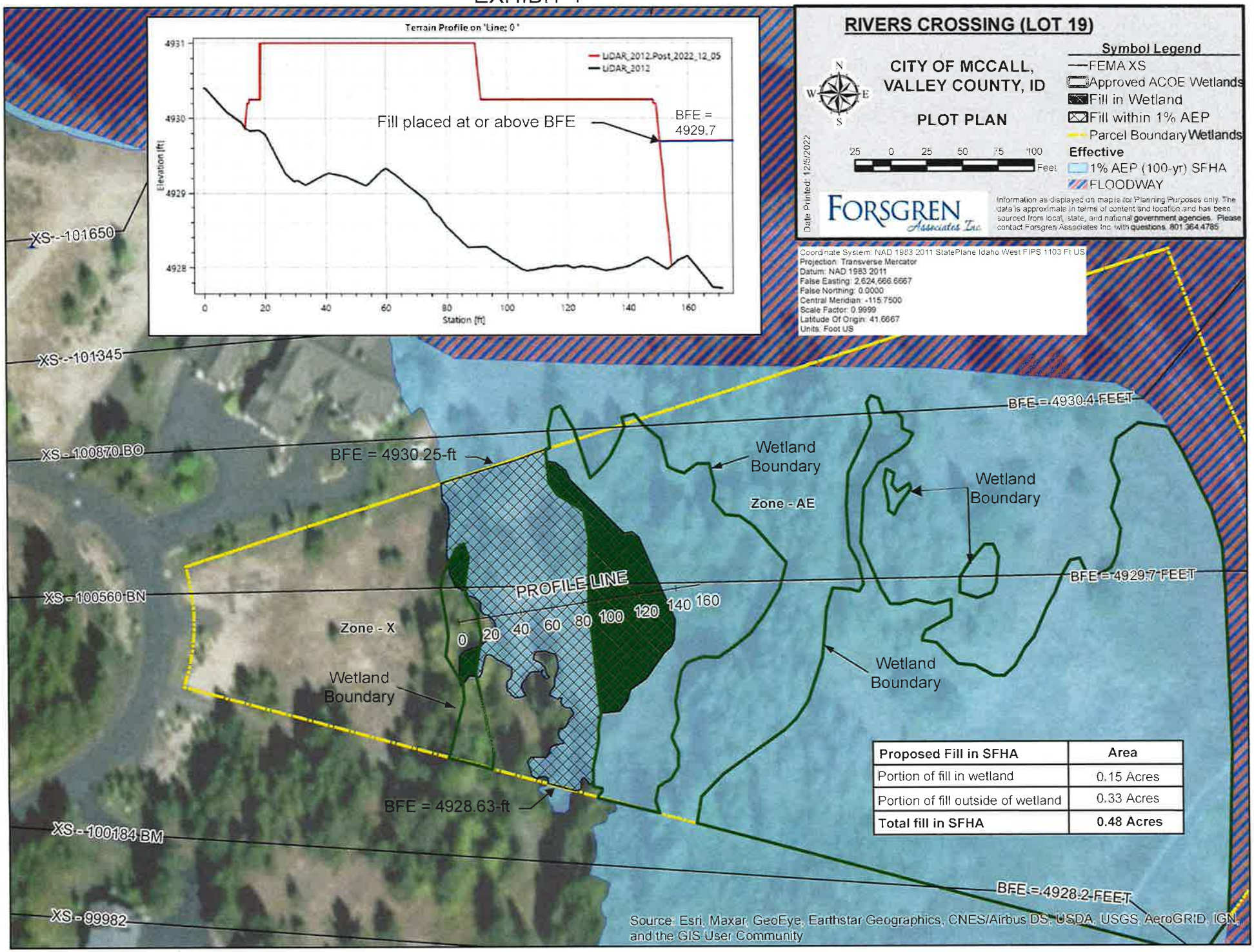
4. **General Standards, to the extent applicable to the proposed activity (MCC 9.8.051(A))**:

15. All subdivision proposals and other development proposals shall have received all necessary permits from those governmental agencies for which approval is required by Federal or State law, including section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 USC 1334.

Compliance: The Applicants hold a Permit from the Army Corps of Engineers for the proposed activity.

5. **Specific Standards (MCC 9.8.052)**: There are no Specific Standards applicable to this Application.

EXHIBIT 1



Proposed Fill in SFHA	Area
Portion of fill in wetland	0.15 Acres
Portion of fill outside of wetland	0.33 Acres
Total fill in SFHA	**0.48 Acres**

EXHIBIT 2

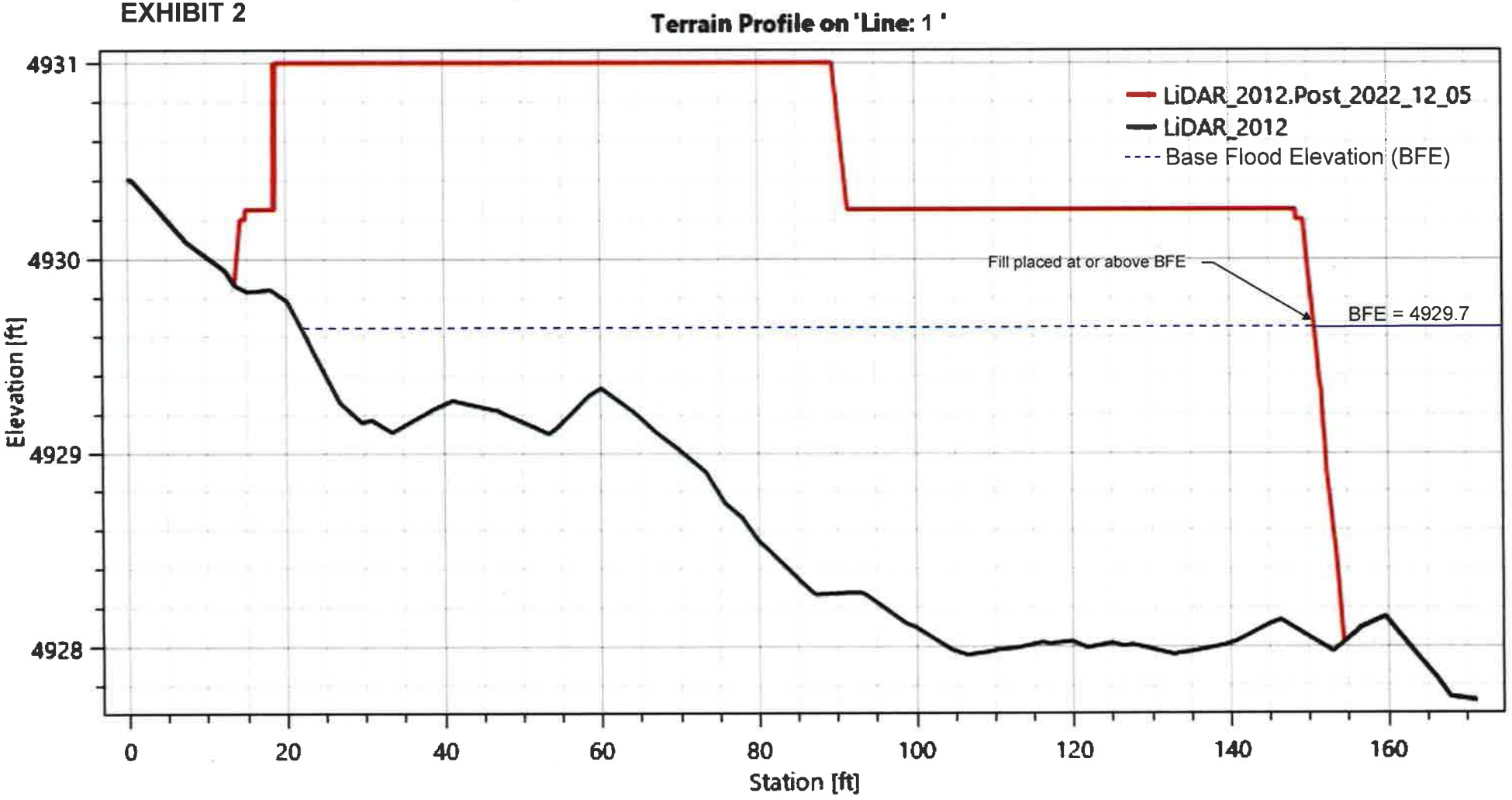

Terrain Profile on 'Line: 1 '
LiDAR_2012.Post_2022_12_05
LiDAR_2012
Base Flood Elevation (BFE)
Fill placed at or above BFE
BFE = 4929.7
Elevation [ft]
Station [ft]
4931
4930
4929
4928
0
20
40
60
80
100
120
140
160

EXHIBIT B

9.8.033: ESTABLISHMENT OF FLOODPLAIN DEVELOPMENT PERMIT:

A floodplain development permit shall be required in conformance with the provisions of this chapter prior to the commencement of any development activities within special flood hazard areas determined in accordance with the provisions of section 9.8.043 of this chapter. (Ord. 977, 1-3-2019, eff. 2-1-2019)

EXHIBIT C

TITLE 46
MILITIA AND MILITARY AFFAIRS
CHAPTER 10
STATE DISASTER PREPAREDNESS ACT

46-1020. PURPOSE AND FINDINGS. (1) The legislature of the state of Idaho finds:
(a) That recurring floods in Idaho threaten human life, health and property and that the public interest requires that the floodplains of Idaho be managed and regulated in order to minimize flood hazards to life, health and property.
(b) That it is the policy of this state to reduce flood damage and the number of people and structures at risk in flood hazard areas through proper floodplain management, including such measures as floodplain zoning ordinances which require structures to be built at a flood protection elevation and/or with floodproofing.
(c) That local units of government have the primary responsibility for planning, adoption and enforcement of land use regulations to accomplish this proper floodplain management. Furthermore, they are best able to adopt and implement comprehensive floodplain management programs that include nonregulatory techniques to accomplish the purposes of this act in cooperation with federal, state and local agencies.

(2) The purpose of this act is:
(a) To protect human life, health and property;
(b) To preserve floodplains for the purpose of carrying and storing flood waters;
(c) To reduce the public cost of providing emergency services, flood control structures and rebuilding public works damaged by floods;
(d) To protect the tax base and jobs in Idaho;
(e) To reduce the threat of increased damage to existing development;
(f) To encourage the orderly development and wise use of floodplains;
(g) To minimize interruptions to business;
(h) To prevent increased flooding and erosion caused by improper development.

History:
[46-1020, added 1998, ch. 301, sec. 1, p. 992.]

EXHIBIT D

TITLE 46
MILITIA AND MILITARY AFFAIRS
CHAPTER 10
STATE DISASTER PREPAREDNESS ACT

46-1022. LOCAL GOVERNMENTS MAY ADOPT FLOODPLAIN ZONING ORDINANCES. Subject to the availability of adequate mapping and data to properly identify the floodplains, if any, within its jurisdiction, each local government is encouraged to adopt a floodplain map and floodplain management ordinance which identifies these floodplains and which requires, at a minimum, that any development in a floodplain must be constructed at a flood protection elevation and/or have adequate floodproofing. The local government may regulate all mapped and unmapped floodplains within its jurisdiction. Nothing in this act shall prohibit a local government from adopting more restrictive standards than those contained in this chapter. Floodplain zoning ordinances shall not regulate the operation, cleaning, maintenance or repair of any ditch, canal, lateral, drain, diversion structure or other irrigation or drainage works that is performed or authorized by the owner thereof pursuant to lawful rights and obligations. If not otherwise exempt from approval, a flood control district's conduct of a "flood fight," as defined in section 42-3103, Idaho Code, shall not require prior local government approval provided all such approvals are obtained within a reasonable time after the imminent flooding event has ended.
History:

[46-1022, added 1998, ch. 301, sec. 1, p. 994; am. 2010, ch. 141, sec. 2, p. 299; am. 2014, ch. 72, sec. 6, p. 188.]

EXHIBIT E

City of McCall
COMMUNITY DEVELOPMENT

www.mccall.id.us

216 East Park Street
McCall, Idaho 83638

Phone 208-634-7052
Main 208-634-7142
Fax 208-634-3038

Dwain and Cindy Sanders
C/O Steven J. Millemann
P.O. Box 1066
McCall, ID 83638

Re: FPDP-23-01 – Floodplain Development Permit Application for River's Crossing Lot 19 Block 2 dated January 23, 2023

Dear Mr. and Mrs. Sanders:

Determination of Floodplain Administrator pursuant to McCall City Code: **Application Denied**

Basis for Determination, Findings of Fact and Conclusions of Law:

I. **Applicable Code:**
   1. Floodplain Development Permit Applications are reviewed by the Floodplain Administrator. MCC 9.8.042.
   2. The City Planner is designated as the Floodplain Administrator. 9.8.041.
   3. According to MCC 9.8.034, no land within the Floodplain can be altered or developed "in any way without full compliance with the terms of this chapter and other applicable regulations."
   4. Title 9 Chapter 8 is not intended in any way to "repeal, abrogate, impair, or remove the necessity of compliance with any other laws, ordinances, regulations, easements, covenants, or deed restrictions, etcetera. However, where this chapter and another conflict or overlap, whichever imposes more stringent or greater restrictions shall control." MCC 9.8.035
   5. No land may be altered within the floodplain without being in compliance "in full compliance with the terms of this chapter and other applicable regulations." MCC 9.8.038.
   6. MCC 3.2.02 provides the following definitions:
      a. Development: Any construction or activity that changes the existing character or use of land upon which such construction or activity occurs.
      b. Excavation: See chapter 70 of the international building code.
      i. "Excavation is the mechanical removal of earth material." - 2018 IBC 7003
      c. Record Grade: The natural grade existing prior to any site preparation grading, or filling, unless a new record grade is approved at the time of subdivision approval and noted on the filed final plat.
      d. Wetlands: Lands which are dedicated and protected in accordance with Federal laws and are not to be included in the calculation of land to meet the requirements for parks.
   7. MCC 3.7.023(B): Permit Criteria: No conditional use or building permit shall be issued, nor is any development, grading, or alteration of any land within this zone permitted, unless the applicant establishes to the satisfaction of the commission and council in the case of a conditional use, or of the administrator in the case of a building permit, that:
      1. The proposed development meets all applicable requirements of this title and title IX of this code.

2. The plans accurately identify the water pool shore contours and high water marks, which, in the case of river environs, shall mean the limits of the area of special flood hazard.
3. A letter is on file from a specialist certified by the United States army corps of engineers wetlands expert that certifies that no wetlands related issues or issues related to fill of navigable waters issues were presented by the proposed development; or that a section 404 permit has been issued or is forthcoming by the corps of engineers, whichever is appropriate, city approval(s) under this title and title IX of this code are contingent upon all applicable section 404 permit requirements being met; if a permit requirement is not met, the city may revoke its approval(s) under this title and title IX of this code.
4. The requirements of the underlying zone are met.
5. The fifty foot (50') building setback line is met per subsection (C)3(c) of this section.
6. Proof of stormwater certification training has been provided by the individual applying for the building permit.

8. According to MCC 3.7.023 (C) Prohibitions: No construction, alteration or activity shall cause harm to:
   a. Water quality.
   b. Fish and aquatic habitats.
   c. Wetlands.
   d. Significant wildlife habitat harboring any threatened or endangered species.
   e. Views of, from, or across a lake or river.
   f. To this end, all applications for building permits within this overlay zone, no matter what the permit may be for, shall be accompanied by a plan for the installation of appropriate natural, storm, and melt water drainage and treatment facilities. Such plans for natural, storm and melt water drainage of the property and on and through the property, shall be consistent with best management practices under state and federal storm and melt water regulatory programs to which the city is subject and consistent with other city programs in these regards to the satisfaction of the city.
   2. Harm Defined: "Harm" for these purposes means:
      a. The creation of conditions which foster runoff of, or other source of fertilizers, toxic substances, or other pollutants or contaminants, into the water;
      b. The excessive clearing of natural vegetation or change of natural landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line;
      c. The removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge;
      d. The filling or dredging of lake bottom or wetlands;
      e. The erection of visual barriers between the lake or river and the roads on the uplands, beyond the extent reasonably necessary for an owner's usage of the land for a permitted use; or
      f. The creation of any other condition which would be inconsistent with best management practices under, or threaten a violation of, state and federal storm and melt water regulatory programs to which the city is subject, or fail otherwise to be consistent with other city programs in these regards, all as established to the satisfaction of the city.
9. Pursuant to MCC 3.8.02(G): Building Permit Required: Until a valid building permit has been issued by the city of McCall, no construction work, including grading, blasting, filling, trenching, tree removal, etc., may be started, except as permitted in section 3.8.03 of this chapter.
10. Pursuant to MCC 3.8.23(B): Structures shall be located in a manner that preserves significant vegetation as set forth in section 3.8.13, as well as water courses, wildlife corridors, wetlands, and significant natural features. Projects should be designed so they complement rather than

dominate the natural landscape. To meet this performance standard all structures should be located:

1. In one of three (3) locations: (a) within tree masses; (b) at the edge of tree or land masses overlooking open space; or (c) in such a way as to preserve the predominate natural features of the site; and
2. At least fifteen feet (15') from any wetland, stream or watercourse.

11. Pursuant to MCC 3.8.23(D) Site grading shall follow the natural terrain of the land and be the minimum necessary for development of the site as determined by the Administrator and Public Works Director.

II. Discussion:

A. The provisions of McCall City Code Title 3 are applicable to Floodplain Development Permits.

A condition for the approval of any Floodplain Development Permit (FDP) is that all proposed Development must meet all applicable Laws, Ordinances, Regulations and Standards. The provisions of Title 9 authorizing FDP's specifically subordinates and subjugates such permits to other applicable standards within the McCall City Code. In that way, a FDP is not a means by which an applicant may avoid the development standards and requirements provided in Title 3 of the McCall City Code.

B. There are three basis found in Title 3 for the denial of the Sanders FDP:

1. No building permit has been issued.

MCC 9.8.042(A)(2) requires that all necessary local, State, and Federal permits have been received. As MCC3.8.02(G) requires a building permit prior to grading or filling. No building permit has been issued for this project and therefore, not all necessary local permits have been received.

2. The proposed Development will cause unpermitted harm.

MCC 3.7.023 prohibits development which will cause harm to:

a. Water quality.
b. Fish and aquatic habitats.
c. Wetlands.
d. Significant wildlife habitat harboring any threatened or endangered species.

The application materials provided to date do not provide adequate evidence that the risk of harm has been minimized.

a. The proposed FDP may result in impermissible runoff

Modifications to the floodplain area for residential development may result in impermissible runoff from the use of fertilizers on lawn areas, excessive silt creation and hazardous materials being introduced to the Payette River during construction. As no building permit application, construction plan, or stormwater management plan has been submitted to date, inadequate evidence exists to determine that the proposed floodplain modification will not result in the creation of impermissible runoff.

b. **The Proposed FDP will result in excessive clearing of natural vegetation or change of natural landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line**

The proposed floodplain development permit will cause excessive clearing of natural vegetation and likewise represents an excessive change to natural land forms within the area between the river shore and the high water mark. The proposed development is excessive because the property in question includes an area that is large enough to support development without requiring excess and additional modification to the floodplain environment. Thus, the proposed Development on the site is in excess of what is required to develop the site in a way that is otherwise consistent with regulations under McCall City Code.

c. **The proposed floodplain development permit will result in the removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge.**

The proposed floodplain development permit will result in the removal burial and destruction of features of the high-water mark (defined by MCC 3.7.023(B)(2) to be the area of special flood hazard along river environs), the land below the same and the immediate upland edge. The proposed floodplain development permit clearly proposes destruction of the existing high water mark land contour, filling and burial of areas below the high-water mark, and extension of the upland edge to a location not previously found on site.

d. **The Proposed floodplain development permit will result in the filling or dredging of lake bottom or wetlands**

The proposed floodplain development permit specifically and unequivocally prescribes and includes the filling of wetlands. Exhibit 1 of the floodplain development permit application clearly identifies Army Corps of Engineers delineated wetlands proposed to be filled.

3. **The proposed site grading is in excess of the "minimum necessary for development of the site as determined by the Administrator and Public Works.**

As no building permit application or Shoreline and River Environs Design Review application has been submitted to date, any site grading is in excess of the minimum necessary for development of the site.

III. Conclusion.

Based upon the foregoing, it is my determination that the Sanders application for FDP is denied because it proposes site work and grading not permissible under the above referenced sections of McCall City Code.

IV. Availability of Appeal of this Determination

Pursuant to MCC 9.9.07, this determination may be appealed according to the provision of Title III, Chapter 15 of the McCall City Code as follows:

3.15.09: ADMINISTRATIVE APPEALS:

(A) A person aggrieved by a decision by the administrator under this title may appeal such decision to the commission.

(B) Appeals shall be filed within ten (10) days after mailing of notice of decision by the administrator.

(C) Appeals shall be conducted as a public hearing before the commission in the manner set forth in subsections 3.15.04 and 3.15.08 of this chapter. (Ord. 821, 2-23-2006, eff. 3-16-2006; amd. Ord. 998, 1-14-2021)

3.15.08: APPEAL OR REQUEST FOR HEARING BY AGGRIEVED PERSONS:

(A) Right To Appeal: An aggrieved person may appeal the commission decision, or request a hearing on the commission recommendation, by filing a notice of appeal or request for hearing in writing with the city clerk no later than ten (10) days after the issuance of the findings and conclusions of the commission. When such notice of appeal or request is received, proceedings before the council shall be on the record made below. A notice of appeal shall set out with particularity the decision or part thereof from which the appeal is being taken, and whether or not facts found by the commission are disputed by appellant.

(B) Time Limits For Actions: The council shall hold a public hearing on the appeal and the application appealed within forty five (45) days of the request and shall follow the hearing procedures established in section 3.15.04 of this chapter. When there is no required hearing, the council shall put the matter down on its agenda upon a date certain for the consideration of written and oral arguments; notice of such hearing shall be provided to appellant no later than fifteen (15) days before the hearing; should appellant desire to file written arguments, appellant shall do so no later than five (5) days prior to the hearing.

(C) Stay Of Proceedings: An appeal or request for hearing stays all proceedings in furtherance of the action appealed from unless, after the notice of appeal or request for hearing is filed, the council finds that by reason of the facts stated in the application, a stay would cause imminent peril to health, safety or property.

(D) Council Action: After the hearing has been held, the council may:

1. Grant or deny the appeal or the permit; or
2. Delay such decision for no longer than sixty (60) days after the hearing date for further study or hearing; provided, however, that the council must render a decision no later than sixty (60) days from the date of the hearing. (Ord. 821, 2-23-2006, eff. 3-16-2006)

3.15.10: JUDICIAL REVIEW:

A person aggrieved by a decision under this title may, after all remedies have been exhausted under local ordinances, seek judicial review under the procedures provided by sections 67-5215(b) through (g) and section 67-5216, Idaho Code. (Ord. 821, 2-23-2006, eff. 3-16-2006)

EXHIBIT F

9.9.07: PROCEDURES, APPEALS AND ACTION:

See the provisions of title III, chapter 15 of this code. (Ord. 822, 2-23-2006, eff. 3-16-2006)

3.15.01: APPLICANT; GENERAL PROCEDURES:

(A) An applicant for an approval required by this title must be the owner of the subject property or a person who has written permission from the owner to make application in the name of the owner.

(B) Unless waived or excepted by specific provisions of this chapter, title, or title IX of this code, the procedures in this chapter apply to preliminary development plan reviews and applications for: an amendment of this title or title IX of this code, a zoning map amendment (except a legislative rather than quasi-judicial revision of the zoning map), a variance, a planned unit development, a conditional use permit, a subdivision, a scenic route approval, a request to vacate an easement or right of way, appeals, or other land use decisions referenced by this title and title IX of this code.

(C) The provisions of section 3.15.02, "Preliminary Development Plan Review", of this chapter, apply prior, and in addition, to the formal application for a land use approval. Evidence of compliance with section 3.15.02 of this chapter must be submitted as part of the application. (Ord. 821, 2-23-2006, eff. 3-16-2006)

3.15.02: PRELIMINARY DEVELOPMENT PLAN REVIEW:

(A) Presentation Of Plan: The applicant will present to the administrator and commission, in a scheduled meeting, but a nonpublic hearing, a preliminary development plan for review and discussion. All materials to be reviewed and discussed shall be provided, or be available, to commission members at a regular scheduled meeting of the commission.

(B) Neighborhood Meetings: It is required that the applicant organize one, or more, meetings of neighboring groups before submitting plans for a public hearing. The purpose of such meetings is to obtain input to improve plans and reduce negative comment from neighbors.

1. Timing: Within 75 days and not less than 7 days prior to the submittal of an application, the applicant shall conduct a neighborhood meeting.

2. Notification: Notification of the neighborhood meeting shall be sent by US mail to all property owners within 300' of the site of the proposed application at least 14 days prior to the date of the meeting. The notice shall describe the application and invite those property owners to the neighborhood meeting to discuss the proposal.

3. Summary of the Meeting: The application submitted to the City shall include a summary of the comments received at the meeting and a listing of the persons attending.

(C) Review And Meetings Not Required For Appeals: Preliminary development plan review and neighborhood meetings are not required for appeals.

(D) Waiver Of Requirements: The administrator may waive the requirements of this section for those applications deemed to be routine in nature or to have no substantial impact on adjacent properties or the community at large. (Ord. 821, 2-23-2006, eff. 3-16-2006; amd. Ord. 983, 12-19-2019, eff. 1-1-2020)

3.15.03: DATE AND NOTICE OF PUBLIC HEARING:

(A) Date; Quorum: The date for public hearings shall be fixed by the chairman of the commission within a reasonable time and in no event shall the date be set later than seventy five (75) days after the receipt of a complete application and all necessary documents pertinent thereto. Notwithstanding the absence of a quorum of the commission at the time set for a particular hearing, members of the commission present may by public announcement at the time and place of the hearing continue that hearing to a time and place where a quorum is anticipated to be present, exercising the power of the chair to set the time of hearing, and thus utilizing actual notice to those who responded to public notice. Further public notice of such a continued hearing need only be given by posting at city hall.

(B) Public Notice: The commission, through the administrator, shall give public notice at least fifteen (15) days prior to the hearing date in the official newspaper of the city. Notice shall be made available to all radio stations within the county for use as a public service announcement.

(C) Notice To Adjacent Property Owners: The applicant shall give notice by regular first class U.S. mail or personal delivery, and shall provide an affidavit, or proof, of such notice, to each owner of property of record as shown on records obtained from the Valley County assessor's office, or a commercial title company doing business in the county or city, any portion of which is located within three hundred feet (300') of the exterior boundary of the subject property, and to all others as required by state law to be entitled to notice. The notice shall be mailed or delivered at least fourteen (14) days prior to the scheduled public hearing. The notice shall give the date, time and place of the hearing, the name(s) of the applicant(s), the relief sought, an identification of the subject property, and such other information as may be prescribed by the commission. If the city is the applicant for modification or revocation of a variance or conditional use, such notice shall also be sent to the owner of the subject property by certified mail, return receipt requested, and delivered by hand to the occupant of the property. If an applicant is not the owner of all of the property affected by the application, as a zoning map amendment initiated by some but not all owners of the property affected, such notice shall also be sent to the owner of the subject property by certified mail, return receipt requested.

(D) Notice To Property Owner: In the event that the application has been filed by a person other than the property owner as such property owner is shown on the last equalized assessment roll, notice shall be mailed to the property owner.

(E) Request For Notice; Fee: Notice shall be given by first class mail to any person who has filed a written request with the administrator. Such a request may be submitted at any time during the calendar year and shall apply for the balance of such calendar year. The city may impose a reasonable fee on persons requesting such notice for the purpose of recovering the cost of such mailing.

(F) Additional Notices: If, during the preliminary review of the proposed project, the commission decides that a greater number of property owners, or owners with properties more than three hundred feet (300') from the exterior boundary of the subject property, should be noticed, the commission will so advise the applicant of the decision and the additional notices required.

(G) Failure To Receive Notice: The failure to receive notice by any person entitled thereto by law or by this chapter does not affect the validity of any action taken pursuant to the procedures set forth in this chapter.

(H) Posting Notice On Property: The applicant shall post notice, in a form approved by the administrator, conspicuously on the premises which is the subject of the application, not less than fifteen (15) days prior to the hearing date. The applicant shall provide photographic evidence of such notice to the administrator.

(I) Published Notice And Map: When notice of a hearing on a proposed zoning map amendment, conditional use, variance, scenic route application, planned unit development, or other zoning action is required to two hundred (200) or more property owners or purchasers of record, notice otherwise required by subsections (C) and (D) of this section need not be given; provided, that the published notice under subsection (B) of this section includes a map identifying the property together with text indicating the general nature of the zoning change proposed. The format of notice shall be provided by the administrator.

(J) Payment Of Fees: Fees shall be paid by the applicant at the time of filing an application. Fees shall be in accordance with a fee schedule established periodically by the council by resolution. These fees shall include costs of publication, mailing fees, any application fees and other charges as may be set by the council by resolution. (Ord. 821, 2-23-2006, eff. 3-16-2006)

3.15.04: CONDUCT OF HEARINGS:

The commission and/or council shall conduct all public hearings under this title as follows:

(A) A sign-in roster shall be kept at the entrance to the hearing room for all persons who wish to testify at the hearing on a particular application or issue.

(B) The chair of the meeting shall conduct the hearing in accordance with "Robert's Rules Of Order, Newly Revised", or its most recent revision.

(C) A transcribable record shall be taken and maintained, including audio and written.

(D) The chair shall call upon the administrator or staff to make preliminary presentation of facts and recommendations to the commission, including a summary of any comments or recommendations from other agencies.

(E) The chair shall then invite the applicant to make a presentation of the proposal to the commission.

(F) Every document or tangible thing referred to by any person during testimony (including charts, maps, photographic evidence or any other evidence) shall be marked and entered into the record of the proceeding. Such exhibits shall be maintained at the office of the city clerk during the appeal period, and if incorporated into or referenced by a condition of approval, thereafter for as long as necessary to ensure conformance. No exhibit shall be used or presented by an applicant as expressing the applicant's intent or promise, unless the applicant intends that compliance with that exhibit may be made a condition of the approval of the application.

(G) After the administrator or staff presentation and presentation by the applicant, the chair shall open the hearing for public testimony and shall invite the public to address the commission in the order of names found on the sign-in roster. If in the opinion of the chair the number of persons testifying is so large as to unduly delay the process of the hearing, the chair may limit public testimony to three (3) minutes or such other time for each member of the public.

(H) All persons testifying before the commission or council shall state, for the record, their full name and address.

(I) Members of the commission, council or the attorney assigned to advise the commission or council may question any person who testified at any time or may, upon approval of a majority of the members present, recall a person for further testimony.

(J) Before the close of the public testimony, the chair shall ask if any person attending the hearing who did not sign the roster wishes to be heard and any such person shall be given one opportunity to testify.

(K) At the close of public testimony, the chair shall solicit comments from administrator or staff for additional facts or clarifications as a result of the testimony given. After comments from administrator or staff, the applicant or appellant shall be given an opportunity to address final comments to the commission or council.

(L) After all testimony, the chair shall declare the public hearing closed and shall bring the matter back before the commission or council for discussion and action. Audience participation ceases at that time. The public hearing may be continued upon motion to a date certain which shall be announced to the public there assembled.

(M) The discussion and decision may be deferred until another date certain which shall be then announced to the public there assembled. (Ord. 821, 2-23-2006, eff. 3-16-2006)

3.15.05: ACTION BY COMMISSION:

Within thirty five (35) days after the public hearing, the commission shall recommend to the council either approval, conditional approval, or disapproval of an application; or, in the case of preliminary approval of a subdivision plat, make its decision to approve or not to approve such plat, with or without conditions. Upon making a recommendation, granting or denying an application, the commission shall specify in the minutes, and forward to the council, findings of fact and conclusions of law which shall include:

(A) The ordinance and standards used in the evaluation of the application.

(B) The manner in which the applicant complies or does not comply with the standards used in evaluating the application.

(C) The reasons for the recommendation upon, or approval or denial of the application.

(D) The conditions, if any, upon which a recommendation or an approval was made.

(E) A denial by the commission is a denial of an application, and, unless appealed to the city council, the application will be terminated and the application fee forfeited.

(F) The actions, if any, that the applicant could take to gain approval of the application.

(G) The time limit set forth above for acting on the application may be extended at the request of the developer and approved by the commission. (Ord. 821, 2-23-2006, eff. 3-16-2006)

3.15.06: NOTIFICATION TO APPLICANT:

Within twenty (20) days after a recommendation has been made or a decision has been rendered, the administrator shall provide the applicant with written notice of the action. (Ord. 821, 2-23-2006, eff. 3-16-2006)

3.15.07: ACTION BY CITY COUNCIL:

(A) Right To Hearing; Exceptions: Within forty five (45) days after receipt of a recommendation and findings of fact and conclusions of law from the commission, the council shall hold a public hearing at which interested persons shall have the opportunity to be heard, except when:

1. The recommendation is for a variance, subdivision, planned unit development, or conditional use permit; and

2. The commission recommended that no second hearing be held; and

3. An appeal of the commission's action is not filed.

When these three (3) conditions are met, the council may act on the commission's recommendation without conducting a second hearing.

(B) Public Notice Of Hearing: If a hearing before the council is required, notice shall be given to the public at least fifteen (15) days prior to the hearing date, by publication, in the official newspaper of the city. Notice shall also be made available to all radio stations within the county.

(C) Notice To Adjacent Property Owners: Notice of the hearing shall be given by regular United States mail or personal delivery to each owner of property as shown on records obtained from the Valley County assessor's office, or a commercial title company doing business in the county or city, any portion of which is within three hundred feet (300') of the subject property, and to such other persons as may be required by state law. The notice shall give the date, time and place of the hearing; the name(s) of the applicant(s); the relief sought; an identification of the subject property; and, such other information as may be required by the council. Notice shall also be posted conspicuously on the subject property not less than one week prior to the hearing date. When notice of a hearing on a proposed zoning map amendment, conditional use, variance, planned unit development, or other zoning action is required to two hundred (200) or more property owners or purchasers of record, notice by mail and by posting as stated above need not be given; provided, that the published notice under subsection (B) of this section includes a map identifying the property together with text indicating the general nature of the zoning change proposed.

(D) Second Hearing; Fee: When a second hearing is required under any circumstances, the applicant shall pay a second filing fee, in addition to the postage and publication fees for the second hearing.

(E) Amendment Concerning Lands Within Impact Area: If an amendment to the zoning map or a planned unit development is proposed with respect to lands in the impact area, and the action proposed would be of legislative, rather than quasi-judicial scope as those terms are understood in land use planning law, then final action must also include approval of the amendment or proposal by the board, whether by identical county ordinance or by county ordinance referring to the city ordinance, after public hearing conducted jointly with the council. Nothing in this subsection shall be read to preclude approval by both council and board where doubt exists as to the legislative or quasi-judicial character of a particular action respecting the zoning map or planned unit development. (Ord. 821, 2-23-2006, eff. 3-16-2006)

3.15.08: APPEAL OR REQUEST FOR HEARING BY AGGRIEVED PERSONS:

(A) Right To Appeal: An aggrieved person may appeal the commission decision, or request a hearing on the commission recommendation, by filing a notice of appeal or request for hearing in writing with the city clerk no later than ten (10) days after the issuance of the findings and conclusions of the commission. When such notice of appeal or request is received, proceedings before the council shall be on the record made below. A notice of appeal shall set out with particularity the decision or part thereof from which the appeal is being taken, and whether or not facts found by the commission are disputed by appellant.

(B) Time Limits For Actions: The council shall hold a public hearing on the appeal and the application appealed within forty five (45) days of the request and shall follow the hearing procedures established in section 3.15.04 of this chapter. When there is no required hearing, the council shall put the matter down on its agenda upon a date certain for the consideration of written and oral arguments; notice of such hearing shall be provided to appellant no later than fifteen (15) days before the hearing; should appellant desire to file written arguments, appellant shall do so no later than five (5) days prior to the hearing.

(C) Stay Of Proceedings: An appeal or request for hearing stays all proceedings in furtherance of the action appealed from unless, after the notice of appeal or request for hearing is filed, the council finds that by reason of the facts stated in the application, a stay would cause imminent peril to health, safety or property.

(D) Council Action: After the hearing has been held, the council may:

1. Grant or deny the appeal or the permit; or
2. Delay such decision for no longer than sixty (60) days after the hearing date for further study or hearing; provided, however, that the council must render a decision no later than sixty (60) days from the date of the hearing. (Ord. 821, 2-23-2006, eff. 3-16-2006)

3.15.09: ADMINISTRATIVE APPEALS:

(A) A person aggrieved by a decision by the administrator under this title may appeal such decision to the commission.

(B) Appeals shall be filed within ten (10) days after mailing of notice of decision by the administrator.

(C) Appeals shall be conducted as a public hearing before the commission in the manner set forth in subsections 3.15.04 and 3.15.08 of this chapter. (Ord. 821, 2-23-2006, eff. 3-16-2006; amd. Ord. 998, 1-14-2021)

3.15.10: JUDICIAL REVIEW:

A person aggrieved by a decision under this title may, after all remedies have been exhausted under local ordinances, seek judicial review under the procedures provided by sections 67-5215(b) through (g) and section 67-5216, Idaho Code. (Ord. 821, 2-23-2006, eff. 3-16-2006)

EXHIBIT G

McCALL AREA PLANNING AND ZONING COMMISSION

IN RE:	)	
	)	
APPEAL OF DENIAL OF FLOODPLAIN DEVELOPMENT PERMIT	)	**FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION**
	)	
Application Number: FPDP-23-01	)	

FINDINGS OF FACTS

Appellant: Dwain & Cindy Sanders

Representative(s): Amy Holm, Millemann, Pemberton & Holm

Application: An appeal of the Administrator's decision to deny a Floodplain Development Permit Application.

Location: Lot 19, Block Two of the River's Crossing Subdivision situate in the S ½ of Section 17, T18N, R3E, B.M. City of McCall, Valley County, Idaho.

Property Address: 221 Morgan Drive

Public Notices:

Newspaper: The Notice of Hearing was published in the *Star News* on August 24, 2023

Mailing: The Notice of Hearing was mailed by the applicant to property owners within 300 feet on August 28, 2023.

Posting: The Notice of Hearing was posted by the applicant on the subject property on August 28, 2023.

Zoning: R8 – Medium Density Residential

Property Size: 5.29 acres

APPROVAL STANDARDS

Title 9, Chapter 8

Flood Control Regulations

Application Requirements: Application for a floodplain development permit shall be made to the Floodplain Administrator prior to any development activities located within special flood hazard areas. The following items shall be presented to the Floodplain Administrator to apply for a floodplain development permit:

(a) A plot plan drawn to scale which shall include, but shall not be limited to, the following specific details of the proposed floodplain development:

(1) The nature, location, dimensions, and elevations of the area of development/disturbance; existing and proposed structures, utility systems, grading/pavement areas, fill materials, storage areas, drainage facilities, and other development;

The floodplain development permit application identifies all locations and dimensions of proposed areas of fill. No other areas of development or disturbance are identified.

(2) The boundary of the special flood hazard area as delineated on the FIRM or other flood map as determined in section 9.8.032 of this chapter, or a statement that the entire lot is within the special flood hazard area;

The floodplain development permit application identifies the special flood hazard area.

(3) The flood zone(s) designation of the proposed development area as determined on the FIRM or other flood map as determined in section 9.8.032 of this chapter;

The floodplain development permit application identifies the proposed fill within the special flood hazard area.

(4) The boundary of the floodway(s) as determined in section 9.8.032 of this chapter;

The floodplain development permit application identifies the floodway boundary.

(5) The base flood elevation (BFE) where provided as set forth in section 9.8.032, 9.8.033, or 9.8.053 of this chapter;

The floodplain development permit application identifies the relevant base flood elevations.

(6) The old and new location of any watercourse that will be altered or relocated as a result of proposed development; and

The floodplain development permit application identifies the proposed modification of the special flood hazard area.

(b) Proposed elevation, and method thereof, of all development within a special flood hazard area including but not limited to:

(1) Elevation in relation to mean sea level of the proposed lowest floor (including basement) of all structures;

N/A

(2) Elevation in relation to mean sea level to which any non- residential structure in Zone A, AE, AH, AO, or A1-30 will be floodproofed; and

N/A

(3) Elevation in relation to mean sea level to which any proposed utility equipment and machinery will be elevated or floodproofed.

N/A

(c) If floodproofing, a Floodproofing Certificate (FEMA Form 086-0-33) with supporting data, an operational plan, and an inspection and maintenance plan that include, but are not limited to, installation, exercise, and maintenance of floodproofing measures will be required prior to Certificate of Occupancy/Completion.

N/A

(d) A Foundation Plan, drawn to scale, which shall include details of the proposed foundation system to ensure all provisions of this chapter are met. These details include but are not limited to:

(1) The proposed method of elevation, if applicable (i.e., fill, solid foundation perimeter wall, solid backfilled foundation, open foundation, or on columns/posts/piers/piles/shear walls);

N/A

(2) Openings to facilitate automatic equalization of hydrostatic flood forces on walls in accordance with subsection 9.8.051(A)8(b) of this chapter when solid foundation perimeter walls are used in Zones A, AE, AH, AO, and A1-30.

N/A

(e) Usage details of any enclosed areas below the lowest floor.

N/A

(f) Plans and/or details for the protection of public utilities and facilities such as sewer, gas, electrical, and water systems to be located and constructed to minimize flood damage.

N/A

(g) Certification that all other local, State, and Federal permits required prior to floodplain development permit issuance have been received.

The applicant has not received a building permit as required by McCall Code Section 3.8.02(G). Because the application has not demonstrated compliance with the Shoreline and River Environs Requirements for Development (McCall Code Section 3.7.023), a building permit cannot be issued for the proposed placement of fill.

(h) Documentation for placement of recreational vehicles and/or temporary structures, when applicable, to ensure that the provisions of subsections 9.8.052(A)5 and (A)6 of this chapter are met.

N/A

(i) A description of proposed watercourse alteration or relocation, when applicable, including an engineering report on the effects of the proposed project on the flood-carrying capacity of the watercourse and the effects to properties located both upstream and downstream; and

N/A

(j) A map (if not shown on plot plan) showing the location of the proposed watercourse alteration or relocation.

N/A

Title 3, Chapter 7, Section 2

Shoreline and River Environs Zone

No conditional use or building permit shall be issued, nor is any development, grading, or alteration of any land within this zone permitted, unless the applicant establishes to the satisfaction of the commission and council in the case of a conditional use, or of the administrator in the case of a building permit, that:

1. **The proposed development meets all applicable requirements of this title and title IX of this code.**

   The placement of fill will create harm as defined in McCall Code Section 3.7.023(C)(2) because the facts in the record show that the proposed development will involve excessive clearing of natural vegetation or change of natural land forms within the area between the water pool shore contour or high-water mark and the fifty-foot (50') setback line. Likewise, the facts in the record, and specifically the proposed plans and testimony of the applicant and City Staff show that the proposed development will involve The removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge and the filling or dredging of lake bottom or wetlands.

2. **The plans accurately identify the water pool shore contours and high-water marks, which, in the case of river environs, shall mean the limits of the area of special flood hazard. The site plan indicates the Water Pool Shore Contour elevation.** The water pool contour line is indicated on the site plan.

3. **A letter is on file from a specialist certified by the United States army corps of engineers wetlands expert that certifies that no wetlands related issues or issues related to fill of navigable waters issues were presented by the proposed development; or that a section 404 permit has been issued or is forthcoming by the corps of engineers, whichever is appropriate, city approval(s) under this title and title IX of this code are contingent upon all applicable section 404 permit requirements being met.**

The applicant has applied for a section 404 permit.

4. **The requirements of the underlying zone are met.**

   N/A

5. **The fifty-foot (50') building setback line is met per subsection (C)3(c) of this section.**

   The applicant is proposing to place fill within and across the fifty-foot (50') building setback area, in order to modify the location of said setback line.

6. **Proof of stormwater certification training has been provided by the individual applying for the building permit.** Proof of stormwater certification is required prior to issuance of a building permit.

PUBLIC COMMENTS

- Email received from Charles Petrock, dated September 12, 2023.
- Email received from James Duzak, dated September 12, 2023.

Additional Record Considered:

Application materials, including detailed proposed construction drawings and plans.

Testimony from the Applicant and the Applicant's Attorney.

Staff testimony by Brian Parker, City Planner.

CONCLUSIONS OF LAW

1. The City of McCall has provided for the processing of Floodplain Development Permit Applications, pursuant to Title 9, Chapter 8 of McCall City Code.
2. Adequate notice of the September 12, 2023 public hearing was provided, pursuant to Section 67-6512, Idaho Code and Title 3, Chapter 15 of McCall City Code.

3. The application does not meet the standards for the granting of a Floodplain Development Permit.

DECISION

THEREFORE, the McCall Area Planning and Zoning Commission hereby **upholds** the administrator's denial of the floodplain development permit application.

Findings of Fact **adopted** this 7th Day of NOVEMBER, 2023.

_____
Robert Lyons, Chair
McCall Area Planning and Zoning Commission

Attest:

_____
Brian Parker, City Planner
City of McCall

Availability of Appeal of this Determination

Pursuant to MCC 9.9.07, this determination may be appealed according to the provision of Title III, Chapter 15 of the McCall City Code as follows:

3.15.08: APPEAL OR REQUEST FOR HEARING BY AGGRIEVED PERSONS:

(A) Right To Appeal: An aggrieved person may appeal the commission decision, or request a hearing on the commission recommendation, by filing a notice of appeal or request for hearing in writing with the city clerk no later than ten (10) days after the issuance of the findings and conclusions of the commission. When such notice of appeal or request is received, proceedings before the council shall be on the record made below. A notice of appeal shall set out with particularity the decision or part thereof from which the appeal is being taken, and whether or not facts found by the commission are disputed by appellant.

(B) Time Limits For Actions: The council shall hold a public hearing on the appeal and the application appealed within forty five (45) days of the request and shall follow the hearing procedures established in section 3.15.04 of this chapter. When there is no required hearing, the council shall put the matter down on its agenda upon a date certain for the consideration of written and oral arguments; notice of such hearing shall be provided to appellant no later than fifteen (15) days before the hearing; should appellant desire to file written arguments, appellant shall do so no later than five (5) days prior to the hearing.

(C) Stay Of Proceedings: An appeal or request for hearing stays all proceedings in furtherance of the action appealed from unless, after the notice of appeal or request for hearing is filed, the council finds that by reason of the facts stated in the application, a stay would cause imminent peril to health, safety or property.

(D) Council Action: After the hearing has been held, the council may:

1. Grant or deny the appeal or the permit; or
2. Delay such decision for no longer than sixty (60) days after the hearing date for further study or hearing; provided, however, that the council must render a decision no later than sixty (60) days from the date of the hearing.

3.15.10: JUDICIAL REVIEW:

A person aggrieved by a decision under this title may, after all remedies have been exhausted under local ordinances, seek judicial review under the procedures provided by sections 67-5215(b) through (g) and section 67-5216, Idaho Code.

EXHIBIT H

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NOTICE OF APPEAL

November 17, 2023

City of McCall
McCall City Clerk and Council
216 East Park Street
McCall, Idaho 83638

Re: Appeal of FPDP-23-01 Floodplain Development Permit Application for River's Crossing Lot 19 Block 2, Application filed January 23, 2023, Administrative Denial emailed March 31, 2023, Planning & Zoning Commission Findings of Fact, Conclusions of Law, and Decision upholding the Administrative Denial dated November 13, 2023

Dear Madam Clerk and Councilmembers:

On behalf of our clients Dwain and Cindy Sanders, and pursuant to McCall City Code Section 3.15.09, this letter shall serve as an appeal of the McCall Area Planning and Zoning Commission's Findings of Fact, Conclusions of Law, and Decision for the Appeal of Denial of Floodplain Development Permit Application FPDP-23-01 for River's Crossing Lot 19 Block 2, which is referred to herein as "P&Z's Denial." The Sanders request that a public hearing be set before the McCall City Council for this to be heard on January 25, 2024, or thereafter, based on the availability of the Sanders' counsel. The Sanders respectfully request that McCall City Council reverse the Planning and Zoning Commission's decision and enter findings and conclusions granting the Sanders' Floodplain Development Permit Application.

Factual Background of FPDP-23-01

Dwain and Cindy Sanders own an approximately 5.3-acre vacant lot, Lot 19 in Rivers Crossing Subdivision, that is adjacent to the North Fork Payette River (the "Property"). They applied for FPDP-23-01 on January 23, 2023, as part of the Conditional Letter of Map Revision ("CLOMR") Application process to remove a 0.48-acre portion of the 5.3-acre Property from the Special Flood Hazard Area ("SFHA"). This process, which is administered by FEMA and recognized by McCall City Code in Title IX, Section 8, allows property owners who elevate small areas of their property within the SFHA above the Base Flood Elevation to receive a letter from FEMA stating the property's changed elevation will meet minimum National Flood Insurance Program Standards. To obtain a CLOMR, the Sanders need to place fill material on 0.48 acres of the Property, of which 0.15 acres are wetlands within the SFHA. Although the remaining 0.33 acres contains no wetlands, it too is within the SFHA.

Because the fill will be placed on wetlands subject to federal jurisdiction under the Clean Water Act (CWA), the Sanders must also obtain a Section 404 permit from the United States Army Corps of Engineers ("Corps"). Section 404 of the CWA prohibits the discharge of dredged or fill material into Waters of the United States ("WOTUS"), including wetlands subject to federal jurisdiction, without a permit.[1] If a project proposes minor discharges of dredged or fill material that "will have only minimal individual or cumulative net adverse effects on the environment," the Corps may issue a Nationwide Permit.[2] Because of the length of time this process has taken, the Sanders are currently working with the Corps to either extend their original Section 404 Nationwide Permit or apply for a new one. In either case, to comply with the federal CWA, the Sanders will obtain a permit from the Corps and be subject to all of that permit's conditions prior to placing the proposed fill on the Property.

FDPD-23-01 seeks only to place fill on 0.48 acres of the Property. The Sanders do not intend at this point to build any structures, but they have applied for a building permit to protect their interest in obtaining FPDP-23-01. Although the Sander's contend that P&Z's Denial erred in requiring a building permit to merely place fill on the Property, applying for a building permit was necessary 1) to ensure all administrative remedies are exhausted in this process and 2) to preserve all the issues that are outlined in more detail below, should this appeal be denied.

Clearly, if the Sanders or any future owner of the Property desire to construct a home, a building permit would be required to ensure compliance with building standards and setbacks, including the 50-foot Shorelines and River Environs Zone setback. Moreover, assuming placing fill as contemplated in FPDP-23-01 is permitted, any future structures on the property would need to be sighted approximately 400-feet away from the North Fork Payette River—much farther away than any of the neighboring homes.

During this process, the Sanders engaged experts in wetlands and aquatic resources management to assist in designing their proposal to minimize the risk of harm and mitigate impacts to the greatest extent practicable. If allowed to proceed, and in addition to complying

[1] 33 U.S.C. § 1344(f).

[2] 33 C.F.R. § 330.1(d); *see also* 33 U.S.C. § 1344(e).

with the conditions of a Section 404 permit, the Sanders are committed to adhering to the recommendations of these experts, including use of best management practices before, during, and after placing the fill to preserve and protect water quality, aquatic resources, and the remaining 2.55 acres of wetlands on the Property.

As noted, FPDP-23-01 was filed on January 23, 2023. On March 31, 2023, the Floodplain Administrator denied FPDP-23-01. The Sanders appealed that decision before the McCall Area Planning & Zoning Commission and a public hearing was held on September 12, 2023. The Commission issued a signed Findings of Fact, Conclusions of Law, and Decision on November 13, 2023, which upheld the Administrator's Denial. The Sanders contend that P&Z's Denial erred as a matter of law and undisputed fact and is arbitrary and capricious in several significant ways, including the following:

1. P&Z's Denial misinterprets McCall City Code because it erroneously assumes that a building permit is required in addition to a floodplain development permit for the sole action of placing fill within the Shoreline and River Environs Zone to facilitate the CLOMR process.

2. The P&Z's Denial is erroneous as a matter of law because the provisions of the Shoreline and River Environs Ordinance do not apply to FPDP-23-01; and, even if found to apply, P&Z's conclusion that placing fill in wetlands unconditionally constitutes "harm," even if such fill is placed pursuant to a Section 404 permit, is erroneous as a matter of law.

3. The record establishes that placing fill as proposed in FPDP-23-01 will not cause "harm" as that term is defined in MCC 3.7.023(C)2.

4. P&Z's Denial and any decision by the City of McCall upholding P&Z's Denial violates Article XII § 2 of the Idaho Constitution and Idaho Code § 50-301 because Idaho law prohibits the City of McCall from imposing conditions that are more stringent than those required by the federal Clean Water Act.

1. <u>A building permit is not required to obtain FPDP-23-01 because the proposed development activity is only to place fill material within the SFHA in aid of a CLOMR Application and pursuant to a Section 404 permit.</u>

P&Z's Denial erred in requiring the Sanders to also obtain a building permit as part of the floodplain development permit application process. Title IX of the McCall City Code states that "[a] floodplain development permit shall be required in conformance with the provisions of this chapter *prior to the commencement of any development activities within the special flood hazard areas* determined in accordance with the provisions of section 9.8.043 of this chapter."[3] Under MCC 9.8.043, "[a]pplication for a floodplain development permit shall be made to the Floodplain Administrator *prior to any development activities located within special flood hazard*

[3] MCC 9.8.033.

areas," and must include, among a detailed list of other requirements, "a complete description of all development to be permitted under the floodplain development permit," which includes "dredging" and "filling," as well as "[c]ertification that all other local, State, and Federal permits required prior to floodplain development permit issuance have been received."[4]

Although P&Z's Denial properly recognized FPDP-23-01 complied with most relevant application requirements, it erred in finding that under MCC 9.8.043(A)1(g):

> The applicant has not received a building permit as required by McCall Code Section 3.8.02(G). Because the application has not demonstrated compliance with the Shoreline and River Environs Requirements for Development (McCall City Code Section 3.7.023), a building permit cannot be issued for the proposed placement of fill.

This illogical interpretation of the City Code not only renders some of its provisions in conflict with one another but reads others straight into oblivion. Such a construction of the Code leads to the ridiculous and unlawful result that within the City of McCall a property owner is *per se* forbidden from ever seeking a CLOMR if the CLOMR requires filling wetlands.

Courts generally presume validity of the actions of zoning boards, including when those boards interpret their own zoning ordinances.[5] However, when an ordinance is ambiguous—that is, subject to more than one reasonable interpretation—"[c]onstructions that would lead to absurd or unreasonably harsh results are disfavored."[6] "All sections of applicable statutes must be construed together so as to determine the legislature's intent," and be read so that "no part is rendered superfluous or insignificant."[7]

There are two incorrect interpretations of McCall City Code at issue here: A) application of the Shoreline Rivers and Environs Zone Requirements ("SREZ") for Development to FPDP-23-01, and B) application of the General Development Prohibited Uses to require a building permit for placing fill in the SFHA. Each are addressed in turn below.

A. The Shorelines and River Environs Zone Requirements for Development only apply when the applicant is "building"—in other words, constructing a "structure"—within the SFHA.

Applying the Shoreline and Rivers Environs Zone Requirements for Development to FPDP-23-01 is incorrect because those requirements only apply to the building of structures. The purpose of the SREZ is to "regulate development along and alterations of . . . the banks and immediate vicinity of the [North Fork] Payette River in order to protect and maintain water quality, fish and wildlife habitat, edge and forest habitat, vistas, and public visual and physical access."[8] "Development" for purposes of Title III, and which is also a word used extensively

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[4] MCC 9.8.043(A)2(a); MCC 9.8.043(A)1(g)
[5] *Chisholm v. Twin Falls Cnty.*, 139 Idaho 131, 136 (2003).
[6] *Payette River Property Owners Ass'n v. Bd. of Comm'rs of Valley County*, 132 Idaho 551, 557 (1999).
[7] *Friends of Farm to Market v. Valley Cnty.*, 137 Idaho 192, 197 (2002).
[8] MCC 3.7.020.

throughout Title III, is defined as "[a]ny construction or activity that changes the existing character or use of land upon which such construction or activity occurs."[9] Even so, the permitted uses in the SREZ are "[a]ll those uses permitted in the underlying zones upon which this zone is superimposed . . . provided they satisfy the special conditions set forth in this chapter, *except that . . . No building and no land filling shall be permitted within a floodway and no building within an area of special flood hazard* . . . unless the applicant complies with the standards set forth in" Title IX, Chapter 8.[10]

Thus, the SREZ Ordinance narrows the definition of "development" for activities, and specifically for activities occurring within the SFHA, to only those that involve "building." The next exception to permitted uses in the SREZ makes this point abundantly clear: "Any *structure*, wholly or partially within this zone . . . and any part of which is within" one hundred fifty feet of the highwater mark of the North Fork Payette River, "notwithstanding *that portions of the structure* are not on land that is within this zone" is subject to the SREZ Requirements for Development.

Obviously, the plain text of MCC 3.7.022(B) prohibits both "building" and "filling" activities in the floodway, but it requires compliance with Title IX, Chapter 8 for "building" within the SFHA. The ordinary meaning of the word "build" or its present participle form "building" is "to form by ordering and uniting materials by gradual means into a composite whole," such as "birds building nests" or building new houses by the river.[11] That is why one does not build fill material on wetlands, rather such material is placed on wetlands—at least in the ordinary sense of the word. The only other provision mentioning "fill" or "filling" in the SREZ Ordinance are where it defines "harm" as "filling or dredging lake bottoms or wetlands" and where it contemplates compliance with federal law with respect to WOTUS and the CWA.[12] Clearly, the ordinance recognizes a distinction between development activities that are "building" and development activities that are "filling," which is necessary because the SREZ Ordinance only applies to development activities proposing to build structures—and certainly does not categorically prohibit filling within the SHFA.

What the Sanders propose here under FPDP-23-01 involves no building of structures whatsoever, nor does it require a Conditional Use Permit. In its decision upholding the Administrator's denial, the P&Z Commission failed to abide by the Code's limit on its power because the Code provisions cited above apply the SREZ Development Requirement's "Permit Criteria" only to those activities that either require a Conditional Use Permit or a building permit for purposes of the SREZ.[13] FPDP-23-01 requires neither. Indeed, reading the specific activities ("development, grading, or alteration of any land") following the words "nor is any" in MCC

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[9] MCC 3.02.02.
[10] MCC 3.7.022(B).
[11] *See* https://www.merriam-webster.com/dictionary/build.
[12] MCC 3.7.023(C)2(d).
[13] MCC 3.7.022(B) states: "*No conditional use or building permit shall be issued*, nor is any development, grading, or alteration of any land within this zone permitted, unless the applicant establishes to the satisfaction of the commission or council in the case of a conditional use, or of the administrator in the case of a building permit that" six enumerated criteria are met.

3.7.023(B) as defining the activities that require a building permit renders the critically important first part of the sentence completely out of the ordinance. That part specifically declares the limits on the commission's, council's and administrator's power as to what permits can be held subject to the SREZ Ordinance: building permits and Conditional Use Permits. P&Z's Denial enlarges the activities for which a building permit is required in the SREZ and thus aggrandizes the power of the Administrator and Commission. Neither of them had any legal right to do this because FPDP-23-01 only proposes to fill, and not build, wetlands within the SFHA. The Administrator's and Commission's legal authority stem from and are strictly limited by the language of the Code, which in this case is clear. As one notable jurist put it, the legislature "does not hide elephants in mouse holes."[14] This maxim is true because applying a law or regulation contrary to what it actually says is the essence of arbitrary government action.

Nor does the abrogation clause in MCC 9.8.035 change this result. Title IX, Chapter 8 does not "remove the necessity of compliance with any other laws, ordinances, regulations," etc. But because the development activity proposed in FPDP-23-01 is not covered by the SREZ Ordinance, there is no non-compliance issue. Furthermore, since the SREZ Ordinance does not apply, there can be no "conflict or overlap" where "more stringent or greater conditions shall control."

Finally, interpreting McCall City Code as in P&Z's Denial leads to the absurd and unreasonably harsh result that no floodplain development permit seeking to place fill in wetlands in aid of a CLOMR Application can ever be obtained—regardless of whether such wetlands are subject to federal jurisdiction and regardless of whether the applicant has a valid Section 404 Permit. Under the Administrator's and P&Z's erroneous interpretation, there simply would be no possible way to take actions that remove one's property from the SHFA in accordance with a legitimate and often used federal process—not to mention pursuant to a federal Section 404 permit—intended to assist property owners who just so happen to own low-lying property subject to an increased risk of flooding.

Because P&Z's Denial applied the SREZ Ordinance to FPDP-23-01, which seeks only to place fill material within the SFHA in aid of a CLOMR Application and pursuant to a Section 404 permit, its finding denying the permit on the basis that FPDP-23-01 failed to comply with the SREZ Requirements for Development was unlawful, and in any event, arbitrary, capricious, and not in accordance with a reasonable interpretation of the ordinance's plain text.

B. FPDP-23-01 does not require first obtaining a building permit before placing fill material in aid of the CLOMR Application process and pursuant to a 404 permit.

P&Z's Denial found that the "applicant has not received a building permit as required by McCall Code Section 3.8.02(G)." That section prohibits starting "construction work, including grading, blasting, filling, trenching, tree removal, etc." without a valid building permit. Notably, although a building permit is required for "construction work" that includes "tree removal," it is not necessary for certain "Timber Harvest" activities that that would certainly fall within the list following the word "including" in MCC 3.8.02(G). In that regard, another way to state the

[14] *Whitman v. American Trucking Ass'ns*, 531 U.S. 457, 468 (2001) (Scalia, J.)

above-noted jurist's maxim is that the greater includes the lesser, but not the other way around. In other words, while a building permit necessarily covers a broad range of construction activities, those activities individually do not trigger the requirement for a building permit. Failure to adhere to this rule caused P&Z's Denial to err by requiring a building permit for the activity proposed in FPDP-23-01.

Under McCall City Code, it is "unlawful for any person to do, or cause or permit to be done . . . any construction, improvement, extension, alteration or demolition *of any building, residence or structure, coming under the purview of this title*, within the McCall area without first procuring a permit authorizing such work to be done."[15] Of course, there is an extremely high likelihood that constructing, improving, extending, altering, or demolishing any building, residence, or structure would require undertaking activities that alter the land, such as by grading, filling, dredging, scraping, etc. But just because a building permit is required before undertaking construction of a building (the greater) that necessarily involves other activities (the lesser) in furtherance of the greater in no way leads to the conclusion that a building permit is required to conduct only the other lesser activities. This is especially true where, as here, the McCall City Code nowhere requires a building permit for the standalone activity of "filling" wetlands.

As is relevant here, a floodplain development permit is required before commencing development activity within the SFHA. There is no mention whatsoever that a building permit is also required prior to commencing development activities. True, "development activity" for the purpose of Title IX, Chapter 8 includes "[a]ny activity defined as development which will necessitate a floodplain development permit; such as: the construction of buildings, structures, or accessory structures; additions or substantial improvements to existing structures; bulkheads, retaining walls, piers, and pools; the placement of mobile homes; or the deposition or extraction of materials; the construction or elevation of dikes, berms and levees." But neither this definition, nor the definition of "development" in Title IX, Chapter 8 have anything to do with defining the activities that require a building permit. These definitions simply state when a flood plain development permit is required, not when a building permit is required, and they certainly do not define the critical question of whether a building permit is required in addition to a floodplain development permit.

The inescapable conclusion is that P&Z's Denial does not and cannot point to any provision in the McCall City Code that requires a building permit for the activities proposed in FPDP-23-01. Yes, the activity of placing fill upon wetlands if conducted in conjunction with building a residence would be covered by an issued building permit (and others such as a Section 404 permit and floodplain development permit.) But there is no construction, alteration, or demolition of a building proposed in FPDP-23-01. P&Z's Denial is unlawful because it requires a permit where no permit is required and denies FPDP-23-01 on that basis.

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[15] MCC 2.1.040.

2. **The P&Z's Denial is erroneous as a matter of law and is arbitrary and capricious because it unconditionally defines placing fill in wetlands as constituting "harm" even if such fill is placed pursuant to a Section 404 permit.**

As has been argued above, a building permit is not required for the activities contemplated by FPDP-23-01, nor are the provisions of the SREZ Ordinance applicable to those activities. Without in any way waiving those arguments, even if the provisions of the SREZ Ordinance were found to be applicable to FPDP-23-01, the P&Z Commission's conclusion that any placement of fill in wetlands constitutes "harm" and therefore violates the SREZ Ordinance, regardless of whether done pursuant to a valid Section 404 Permit, is erroneous as a matter of law and arbitrary and capricious.

Unconditionally defining filling of wetlands as "harm" renders other processes contemplated and required by the McCall City Code meaningless. The SREZ Ordinance is intended to regulate development more stringently within a certain area of land adjacent to and extending away from enumerated water bodies that are "distinguishing features of this area making it a destination resort for tourists and summer residents."

The principle flaw in the aforesaid legal conclusion in P&Z's Denial is that it wholly ignores the SREZ Ordinance's Permit Criteria that require either a letter certifying "that no wetlands related issues or issues related to fill of navigable waters were presented by the proposed development; ***or*** that a section 404 permit has been issued or is forthcoming by the corps of engineers, whichever is appropriate."[16] The SREZ Ordinance and Floodplain Development Permit Ordinances both contemplate that, where federal jurisdiction exists over jurisdictional Waters of the United States ("WOTUS"), compliance with those regulations is sufficient to avoid a finding that filling of wetlands constitutes "harm" as defined in MCC 3.7.023(C)2.

Thus, a finding of harm cannot be made as to FPDP-23-01 provided that the Applicant obtains a Section 404 permit prior to the placement of the fill. Doing so would render MCC 3.7.023(B)3 superfluous. In other words, there would be no reasons to make "city approval(s) under this title and title IX of this code contingent upon all applicable section 404 permit requirements being met." If the city can simply deny a floodplain development permit application for fill or a building permit to construct a building in the SFHA even if all applicable 404 permit requirements are met, then this section of Code is just a Trojan Horse to tempt unsuspecting property owners seeking to develop property to comply with federal law only to be collaterally attacked by the City of McCall's denial of a permit that in all respects complies with federal law.

Here, P&Z's Denial upheld the Administrator's Denial because it found the proposed placement of fill will create harm as defined by McCall City Code Section 3.7.023(C)2. It listed three bases, 3.7.23(C)2b, c, and d, for finding "harm." Yet, each of these is an activity defined as a "discharge" under Section 404 federal guidelines and therefore are permitted activities subject

[16] MCC 3.7.023(B)3 (emphasis supplied).

to issuance of a Section 404 permit.[17] In this case, a Section 404 permit previously was issued, and the Sanders are currently in the process of obtaining an extension or new Nationwide Permit. Certainly, if the Section 404 permit is not issued, the City can revoke any approval to conduct development activities within the SFHA under MCC 3.7.023(B)3. And it is always the case that any applicant who caused the discharge of pollutants into WOTUS without a permit would be subject to federal enforcement actions or the citizen suit provision in the CWA. Therefore, the unconditional finding of harm has stymied all lawful procedure for FPDP-23-01 because P&Z's Denial fails to recognize the process set forth in McCall City Code for developing in the SREZ subject to a duly issued Section 404 permit.

3. **The P&Z Commission's finding that placing fill as proposed in FPDP-23-01 will cause "harm" is wholly unsupported by the record.**

The record contains no evidence that the proposed placement of fill would "harm" wetlands.[18] While P&Z's Denial dutifully regurgitates the language in MCC 3.7.03(C)2 as the reason for denying FPDP-23-01, it fails to elaborate on how it reached these conclusions other than to claim reliance on "Application materials, including detailed proposed construction drawings and plans; Testimony from the Applicant and the Applicant's Attorney; and Staff testimony by Brian Parker, City Planner."

A review of the record indicates that the only evidence provided by the City to support a finding of harm are two statements by the City Planner that "the filling of lake bottom of wetlands" is unequivocally harm and that "since they have not included what sort of building they would like to do, and are just purely placing fill, any placement of fill or modification of natural vegetation would be excessive because they are not proposing any sort of development."[19] The City Planner then concluded "that is the extent of the reasoning" to find harm.[20]

In contrast to the City's dearth of evidence, the Sanders provided a thirty-three-page expert report developed by Forsgren Associates, Inc. to analyze the extent of potential harm and outline measures to minimize any environmental harm that could be posed by the placement of the fill on the Property. Importantly, that report noted that the protection of water quality is (or would be) addressed in the conditions of the Section 404 permit and that by implementing best management practices (BMPs) FPDP-23-01 would presumptively comply with state water quality standards, including Idaho's Antidegradation Policy, by maintaining and supporting the beneficial uses designated for the section of the North Fork Payette River that runs adjacent to the Property. The report also found that the proposed BMPs would protect adjacent wetlands that would remain undisturbed and prevent impermissible runoff from occurring. Additionally, the placement of fill has been designed to protect higher functioning older forested wetlands on the

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[17] *See* 40 C.F.R. § 232.2; 33 U.S.C. § 1344(f).
[18] *See Spencer v. Kootenai Cnty.*, 145 Idaho 448, 456 (2008) ("Substantial and competent evidence is less than a preponderance of the evidence, but more than a mere scintilla.")
[19] *McCall Area Planning & Zoning*, at 2:05:10 to 2:06:06, YOUTUBE (Sept. 12, 2023) https://www.youtube.com/watch?v=Q49Um0A-IZo.
[20] *Id.* at 2:06:07 to 2:06:10.

Property and will primarily impact what are characterized as scrub/shrub wetlands, which typically consist of woody vegetation that is less than six feet tall.

It is also important to recognize that the mere fact that a Section 404 permit can and will be issued for the proposed placement of fill is substantial evidence that no harm, as that term is defined by MCC 3.07.023(C)2, will occur. As stated in the previous section, that code provision primarily defines "harm" as activities that may be conducted pursuant to a Section 404 permit, which not only allows for the fill to be placed in wetlands subject to federal jurisdiction but also imposes conditions on activities conducted before, during, and after placement of the fill. Evidence of a Section 404 permit either issued or forthcoming is more than sufficient to overcome the "extent of the reasoning" provided by the City Planner to conclude that FPDP-23-01 would cause harm.

Because evidence in the record shows that no harm will be caused by FPDP-23-01, P&Z's Denial must be reversed.

4. **P&Z's Denial and any decision by the City of McCall upholding P&Z's Denial violates Article XII, § 2 of the Idaho Constitution and Idaho Code § 50-301 because Idaho law prohibits the City of McCall from imposing conditions that are more stringent than those required by the federal Clean Water Act.**

   P&Z's Denial is based on the finding that FPDP-23-01 will create harm because:

   > the facts in the record show that the proposed development will involve excessive clearing of natural vegetation or change of natural land forms within the area between the water pool shore contour or high-water mark and the fifty-foot (50') setback line . . . the facts in the record, and specifically the proposed plans and testimony of the applicant and City Staff show that the proposed development will involve the removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge and the filling or dredging of lake bottom or wetlands.[21]

   As discussed in Section 2 above, these three bases are all activities that if occurring into WOTUS would require a Section 404 permit. However, since a Section 404 permit can be issued for the proposed dredge and fill of wetlands, FPDP-23-01 meets the requirements of the CWA to discharge dredged or fill material into WOTUS. Thus, the only way to interpret P&Z's Denial of FPDP-23-01 is as a determination that a Section 404 permit is insufficient to prevent "harm" as required by the McCall City Code. Consequently, the McCall City Code necessarily imposes conditions on the placement of fill in wetlands subject to federal jurisdiction that *are more stringent than* what is required by CWA.

   The CWA sets a national floor for the control of water pollution below which "States or political subdivisions thereof" cannot go.[22] The CWA does not restrict States from allocating

[21] Appeal of FPDP-23-01 – Findings of Fact, McCall Planning and Zoning Commission, at 6 (Nov. 7, 2023).
[22] 33 U.S.C. § 1370.

water resources within their boundaries nor from regulating land use within their boundaries even if the areas regulated are also subject to CWA jurisdiction.[23] In short, although States and political subdivisions thereof are prohibited from adopting or enforcing standards or limitations respecting the "discharge of pollutants" (as that term is defined in 33 U.S.C. § 1362) into waters of the United States that are "less stringent than" the CWA, they are free to impose more onerous standards subject to the limitations of other state and federal law.[24]

In Idaho, there are two limitations on the power of a local government to impose more stringent standards than the CWA prescribes: express and implied preemption under the state constitution and Idaho Code § 50-301.

A. State law expressly preempts local governments from regulating discharges subject to the CWA more stringently than the requirements of the CWA.

Article XII, § 2 of the Idaho Constitution permits an incorporated city or town to "make and enforce within its limits, all such local police, sanitary and other regulations *as are not in conflict with its charter or with the general laws*."[25] Similarly, Idaho Code § 50-301 allows cities to exercise all powers and perform all functions of local self-government in city affairs as are not specifically prohibited by or in conflict with the general laws or the constitution of the state of Idaho." While a city's "ability to act is not confined to only those actions specifically mentioned in LLUPA," such ability is constrained when the legislature says so.[26]

With respect to the CWA, Idaho Code § 39-3601 is a general law that expressly prohibits local governments from imposing more stringent conditions than what is required by the CWA:

> It is the intent of the legislature that the state of Idaho fully meet the goals and requirements of the federal clean water act and that the rules promulgated under this chapter not impose requirements beyond those of the federal clean water act.[27]

Additionally, Idaho law provides:

> The legislature cannot conveniently or advantageously set forth in this chapter all the requirements of all of the regulations which have been or will be established under the clean water act. However, any state permitting program must avoid the existence of duplicative, overlapping or conflicting state and federal regulatory systems. Further, the board may promulgate rules to implement a state permitting program but such rules shall not impose conditions or requirements more stringent or broader in scope than the clean water act and regulations adopted pursuant thereto. Further, the department will not require Idaho pollutant discharge

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[23] *Id.*; *see also Prosolino v. Nastri*, 291 F.3d 1123 (9th Cir. 2002).
[24] 33 U.S.C. § 1370.
[25] IDAHO CONST. art. XII, § 2.
[26] *Cisek v. Kootenai Cnty. Bd. of Comm'rs*, 254 P.3d 24, 32 (Idaho 2011)
[27] I.C. § 39-3601.

elimination system (IPDES) permits for activities and sources not required to have permits by the United States environmental protection agency.[28]

When the City of McCall increases the regulatory burden beyond what is required by the CWA, such as P&Z's Denial of FPDP-23-01, it renders the City's action "in conflict with . . . the general laws" of the state of Idaho. Moreover, the authority to make standards under the CWA is clearly delegated to the Board of Environmental Quality and IDEQ, not city governments. Therefore, under both Article XII, § 2 and Idaho Code § 50-301, the City of McCall has acted *ultra vires* because the legislature has limited the extent that local regulation can exceed the requirements of the CWA.[29]

B. Even if the City of McCall is not expressly preempted, it is impliedly preempted from regulating more stringently than what is required by the CWA.

The doctrine of implied preemption is a principle of long-standing in the State of Idaho. It derives from the language in Article XII, § 2 that limits the police power of local governments to making and enforcing laws that are not in conflict with laws enacted by the legislature and arises when the legislature "intend[s] to occupy the whole field" of regulation.[30]

Implied preemption occurs where, despite the lack of specific language preempting or empowering local government regulation, "the state has acted in the area in such a pervasive manner that it must be assumed that it intended to occupy the entire field of regulation."[31] Intent may be assumed where 1) state law indicates the subject matter is to be "regulated by means of one, uniform statewide scheme enabling the state to enter into meaningful interstate agreements," or 2) the laws regulating the subject matter are a "comprehensive statutory scheme" that "demands a statewide, rather than local approach."[32] Even if the ordinance and statute are identical, "it is obvious that the field sought to be covered by the ordinance has already been occupied by the state legislation."[33]

The City of McCall is impliedly preempted from more stringently regulating activities of property owners that are otherwise subject to (*i.e.*, in the same field as) the permitting requirements of the CWA. Title 39, Chapter 36 of the Idaho Code is a comprehensive legislative scheme implementing Idaho's obligations and duties under the CWA and indicates that the subject matter is to be regulated to "avoid the existence of duplicative, overlapping or conflicting state and federal regulatory systems."[34] If the City of McCall imposes more stringent conditions on property owners who are otherwise subject to the requirements of the CWA, it necessarily infringes on the State of Idaho's ability to manage and enforce the state's water quality standards in a comprehensive and statewide manner that respects the fact that water ways flow through

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[28] I.C. § 39-175B.
[29] *See Black v. Young*, 834 P.2d 304 (Idaho 1992).
[30] *See, e.g., Caesar v. State*, 610 P.2d 517 (Idaho 1980); *Clyde Hess Distributing Co. v. Bonneville Cnty.*, 210 P.2d 798 (Idaho 1949).
[31] *Envirosafe Services of Idaho, Inc. v. Owyhee Cnty.*, 735 P.2d 998, 1001 (Idaho 1987)
[32] *Id.*
[33] *Id.* at 1002.
[34] I.C. § 39-175B.

multiple jurisdictions within and outside of the state. Therefore, the City of McCall is implied preempted from more stringently regulating and thus denying FPDP-23-01 when the activities proposed in FPDP-23-01 are permitted pursuant to a validly issued Section 404 permit.

Because both the state constitution and state law prohibit the City of McCall from regulating more stringently than what is required by the CWA, P&Z's Denial of FPDP-23-01 is in violation of both constitutional and statutory provisions.

Conclusion

For the foregoing reasons, the Sanders respectfully request that the McCall City Council **REVERSE** the McCall Planning and Zoning Commission's decision and **GRANT** FPDP-23-01.

Sincerely,

Amy Holm
Steven J. Millemann
Fred Coriell

EXHIBIT I

3.7.023: REQUIREMENTS FOR DEVELOPMENT:

(A) Review: Design review is required for all development, including all single-family residences and accessory buildings, as provided for in chapter 16 of this title.

1. In addition to the design review requirements set forth in other sections of this title, design review for development within the Shoreline and River Environs Zone, shall also assess and mitigate the visual impacts of development.

a. Development should not dominate the vistas of water to the extent that it has an unreasonable adverse impact on the visual quality of its setting.

b. Development should be compatible in form, line, color and texture with its surroundings.

c. Development should not significantly differ in scale or contrast to its surroundings to that extent that it has an unreasonable adverse impact on the visual quality of its setting.

d. Structures should be clustered to allow for visibility through the site of the lake or river and avoid a wall of structures as viewed from the water.

2. If in the opinion of the Administrator, the visual impacts of the development are potentially significant, a visual impact assessment of the development shall be required. An applicant's visual impact assessment should visualize the proposed development and evaluate potential adverse impacts of the development on scenic views or the views from or to the lake or river, and determine effective mitigation strategies, if appropriate.

(B) Permit Criteria: No conditional use or building permit shall be issued, nor is any development, grading, or alteration of any land within this zone permitted, unless the applicant establishes to the satisfaction of the commission and council in the case of a conditional use, or of the administrator in the case of a building permit, that:

1. The proposed development meets all applicable requirements of this title and title IX of this code.

2. The plans accurately identify the water pool shore contours and high water marks, which, in the case of river environs, shall mean the limits of the area of special flood hazard.

3. A letter is on file from a specialist certified by the United States army corps of engineers wetlands expert that certifies that no wetlands related issues or issues related to fill of navigable waters issues were presented by the proposed development; or that a section 404 permit has been issued or is forthcoming by the corps of engineers, whichever is appropriate, city approval(s) under this title and title IX of this code are contingent upon all applicable section 404 permit requirements being met; if a permit requirement is not met, the city may revoke its approval(s) under this title and title IX of this code.

4. The requirements of the underlying zone are met.

5. The fifty foot (50') building setback line is met per subsection (C)3(c) of this section.

6. Proof of stormwater certification training has been provided by the individual applying for the building permit.

(C) Development:

1. Prohibitions: No construction, alteration or activity shall cause harm to:

a. Water quality.

b. Fish and aquatic habitats.

c. Wetlands.

d. Significant wildlife habitat harboring any threatened or endangered species.

e. Views of, from, or across a lake or river.

f. To this end, all applications for building permits within this overlay zone, no matter what the permit may be for, shall be accompanied by a plan for the installation of appropriate natural, storm, and melt water drainage and treatment facilities. Such plans for natural, storm and melt water drainage of the property and on and through the property, shall be consistent with best management practices under state and federal storm and melt water regulatory programs to which the city is subject and consistent with other city programs in these regards to the satisfaction of the city.

2. Harm Defined: "Harm" for these purposes means:

a. The creation of conditions which foster runoff of, or other source of fertilizers, toxic substances, or other pollutants or contaminants, into the water;

b. The excessive clearing of natural vegetation or change of natural landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line;

c. The removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge;

d. The filling or dredging of lake bottom or wetlands;

e. The erection of visual barriers between the lake or river and the roads on the uplands, beyond the extent reasonably necessary for an owner's usage of the land for a permitted use; or

f. The creation of any other condition which would be inconsistent with best management practices under, or threaten a violation of, state and federal storm and melt water regulatory programs to which the city is subject, or fail otherwise to be consistent with other city programs in these regards, all as established to the satisfaction of the city.

3. Improvements:

a. The owner shall apply for approval under the provisions of chapter 10, "Planned Unit Development", of this title, if the owner wishes to construct, in whole or part on the land within the zone, any improvements other than:

(1) A single-family residence; and/or

(2) Accessory structures commonly associated with dwellings, such as garages or toolsheds; however,

(3) The application for a building permit for such a dwelling or accessory structure must be accompanied by a site plan demonstrating that no "harm", as defined above, is threatened by the construction; and construction in accord with that site plan shall be a condition of the permit issuance.

b. The application shall be evaluated against the standards set out in subsections (C)1 and (C)2 of this section, except that improvements discussed in subsection (C)4 and the following subsections of this section shall be evaluated against the standards in those subsections.

c. Fifty-foot (50') Building Setback Line:

(1) There is hereby established a fifty feet (50') setback from the lake water pool shore contour and fifty feet (50') from the stream high water mark The setback shall be measured along a line perpendicular to a line tangent to the nearest point so determined on the lake water pool shore contour or stream high water mark, without regard to the spatial relationship between that nearest point and any boundary lines of the lot in question. All structures, perched beaches, lawns (except for native grasses identified in City of McCall publication, "Native and Suitable Plants"), patios, walls and fences shall be prohibited within the fifty foot (50') setback with the following exceptions: (1) structures addressed by subsection (C)4; (2) public walkways to the

waterfront, and private walkways not exceeding eight feet (8') in width; (3) essential public infrastructure; and (4) public parks facilities and civic uses not requiring sanitary waste disposal.

(2) Access along the beach below the lake water pool shore contour or stream high water mark shall be unobstructed, except as otherwise provided in the approval of an applicable conditional use or variance.

d. Additionally, development in commercial zones, including buildings, parking areas, and sidewalks, shall not cover more than eighty percent (80%) of the total area of the lot or parcel; except in the central business district zone where the total lot coverage may be up to ninety five percent (95%), with not less than the remaining five percent (5%) maintained in landscaping.

e. Maximum height of any structure is thirty five feet (35').

4. Private And Public Docks And Piers: Private and public docks and piers shall:

a. Require a building permit from the city in addition to the permits required by the state department of lands, or other authorities having jurisdiction.

b. Be used to provide access to boats.

c. Be floating or held on pilings.

d. Be built with chemically inert materials; and foam materials shall be fully enclosed.

e. Not be constructed in whole or part by or in association with excavation or dredging, unless a conditional use permit has first been issued.

5. Commercial Marinas: Commercial marinas are a conditional use and shall meet all requirements in subsection (A) of this section, and in addition shall:

a. Provide an environmental assessment which addresses the issues identified by the commission and/or city staff during the required preapplication consultation.

b. Have restrooms, pump-out facilities for boat sewage receptacles, and trash receptacles for other boat wastes, on or near and accessible from such facilities.

c. Meet all other building code and environmental requirements.

6. Commercial Docks And Piers: Commercial docks and piers are a conditional use and shall meet requirements in subsection (A) of this section and shall meet all other building code and environmental requirements.

7. Retaining Walls And Similar Construction: Retaining walls and similar construction to arrest erosion shall be permitted and shall:

a. Be at or above the higher of:

(1) The ordinary high water mark for purposes of this title to land, as determined by the Idaho department of lands; or

(2) The lake water pool shore contour; and not involve fill above original, natural grade and contour at the location, unless a different location, and/or different fill, is approved by the commission as a conditional use, and is also declared by it to be beneficial to the public and the environmental qualities of the shoreline; and unless that different location is also permitted by other governmental authorities having jurisdiction; provided, however, that fill may be added directly behind a retaining wall to an extent not greater than eighteen inches (18") above original, natural grade at the wall, and blended back into the natural slope. "Original", for purposes of this subsection, means existing historically within the prior two (2) years.

b. Be constructed of reinforced native rock and/or concrete.

c. Not be painted.

d. Be set at such a depth to prevent movement of backfill materials into the water, and at such a depth set and reinforced to the extent to prevent frost heaving and other natural structural deterioration.

8. Breakwater And Similar Construction: Breakwater and similar construction shall:

a. Conform to the structural standards required by the U.S. corps of engineers, and must be approved in writing by the Idaho department of lands and by the planning commission as a conditional use.

b. Be floating, and shall not extend more than one foot (1') above the surface of the lake; and shall be lit or marked as required by the state of Idaho. (Ord. 821, 2-23-2006, eff. 3-16-2006; amd. Ord. 864, 2-12-2009; Ord. 880, 9-23-2010; Ord. 998, 1-14-2021; Ord. 1009, 10-6-2022)

3.8.23: SITE DESIGN:

(A) Purpose:

1. To ensure that site development maintains natural features of the site and is compatible with the surrounding built and natural environment.

2. To guarantee that site planning is undertaken as an integrated process inclusive of all factors influencing the development of the site and showing compliance with requirements of this title including the following:

a. Chapters 3-7 "Development Standards" for all Zones including: setbacks, lot coverage, and distance between buildings.

b. 3.7.021 "Shoreline And River Environs Zone."

c. 3.7.031 "Scenic Route Zone."

d. 3.8.04 "Fire Mitigation Standards."

e. 3.8.061 "Parking, Loading And Internal Circulation Area Development Standards."

f. 3.8.063 "Bicycle Parking."

g. 3.8.064 "Driveways."

h. 3.8.066 "Loading Areas."

i. 3.8.10 "Fencing And Walls."

j. 3.8.12 "Corner Vision."

k. 3.8.13 "Landscaping And Buffering."

l. 3.8.15 "Snow Storage And Drainage."

m. 3.8.19 "Main Entrances In R4 Through R16 Zones."

n. 3.8.20 "Special Standards For Garages."

o. 3.8.24 "Design, Location, And Screening Of Service Areas."

p. Chapter 14 "Outdoor Lighting."

q. 9.7.033 "Special Subdivision And Development Standards" for cuts, fills and grading.

(B) Structures shall be located in a manner that preserves significant vegetation as set forth in section 3.8.13, as well as water courses, wildlife corridors, wetlands, and significant natural features. Projects should be designed so they complement rather than dominate the natural landscape. To meet this performance standard all structures should be located:

1. In one of three (3) locations: (a) within tree masses; (b) at the edge of tree or land masses overlooking open space; or (c) in such a way as to preserve the predominate natural features of the site; and

2. At least fifteen feet (15') from any wetland, stream or watercourse.

(C) Site design shall minimize the modification of natural drainage patterns.

1. When modifications are necessary, surface drainage systems such as swales and retention basins are preferable to underground systems.

2. Drainage designs shall avoid the concentration, runoff, and acceleration of the runoff.

3. Site design shall be executed in a way which will avoid drainage impacts such as erosion and road damage both on-site as well as downstream.

4. Drainage designs shall avoid damage to the root systems of existing trees from either trenching, grading changes or over saturation of soils around trees.

(D) Site grading shall follow the natural terrain of the land and be the minimum necessary for development of the site as determined by the Administrator and Public Works Director.

1. Slopes shall be no steeper than 3-to-1 unless qualified soils engineering information is provided as part of the application.

2. Cuts and fills shall have surface drainage that prevents off-site impacts, provides erosion control, and avoids impacts to existing and offsite trees.

3. Cut and fill slopes shall be re-vegetated and terraced or controlled by retaining walls to protect against erosion, sedimentation, and the spread or cultivation of noxious and invasive weeds.

(E) Structures shall be sited so that their form does not break prominent skyline and preserves significant views. Development located on ridgetops is prohibited.

(F) The alignment of streets and driveways shall follow the contours of the site to minimize cuts and fills, preserve natural drainage patterns, and produce roads that are easily negotiated.

(G) All utilities shall be installed underground.

1. New underground utilities shall be located outside of the dripline of existing trees if trenched or be tunneled a minimum of three (3) feet below existing grade within the tree's dripline. The guiding principle is that no tree root two inches (2") or larger shall be cut.

2. In all commercial zones, all utilities within the public right of way adjacent to the front property line shall be undergrounded or conduit installed for future undergrounding. (Ord. 998, 1-14-2021)

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APPELLANTS' REPLY TO WHITE PETERSON MEMORANDUM TO CITY COUNCIL REGARDING APPEAL OF FPDP-23-01

March 19, 2024
City of McCall
McCall City Clerk and Council
216 East Park Street
McCall, Idaho 83638

Re: Supplemental Briefing Requested for Appeal of FPDP-23-01 Floodplain Development Permit Application for River's Crossing Lot 19 Block 2, Application filed January 23, 2023, Administrative Denial emailed March 31, 2023, Planning & Zoning Commission Findings of Fact, Conclusions of Law, and Decision upholding the Administrative Denial dated November 13, 2023.

Dear Madam Clerk and Councilmembers:

On behalf of Dwain and Cindy Sanders ("Appellants"), we submit this reply to White Peterson's Memorandum to the Mayor and City Council, dated February 17, 2024 and received March 1, 2024 ("Memo"). This reply addresses each question discussed in the Memo and responds to its conclusions with which Appellants do not agree. This reply is intended to be a succinct response to the Memo, providing a high-level review of Appellants' position regarding FPDP-23-01. A more extensive discussion of Appellants' legal arguments is presented in Appellants' Opening Supplemental Brief in Support of Granting FPDP-23-01, dated March 1, 2024 and based on the robust record before the Council.

I. INTRODUCTION

FPDP-23-01 must be granted because it is "in full compliance with the terms of [Title IX, Chapter 8] and other *applicable* regulations." The Administrator and P&Z unlawfully denied FPDP-23-01 because they believed a building permit was an "applicable regulation" but could not

be issued because FPDP-23-01 would create "harm" to jurisdictional wetlands.[1] But even if a building permit is required, there is no lawful basis for the Administrator's and P&Z's decision to find "harm," as that term is defined in MCC 3.7.023, because FPDP-23-01 and the strict requirements of Appellants' Section 404 permit clearly establish that placing the proposed fill will not "harm" jurisdiction wetlands. Requiring a building permit, or alternatively, applying the Shoreline and River Environs Zone ordinance as criteria to grant FPDP-23-01, is an arbitrary government action because nothing in the McCall City Code gives the Administrator or P&Z the authority to do so. Appellants seek only to have the law applied to them as written in the plain terms of the McCall City Code. Because it was not, the decision below must be reversed.

II. APPELLANTS' RESPONSES TO QUESTIONS POSED IN THE MEMO

1. What is being asked of the City Council?

City Council is being asked to decide whether to grant or deny FPDP-23-01 based strictly on the "record made below." MCC 3.15.08(A). Council may either "grant or deny" the appeal, and, in any event, must do so "no later than sixty (60) days from the date of the hearing." MCC 3.15.08(D)(2). If Council denies the appeal, it should clearly articulate the standard by which it reviewed the record and decisions below, and the Council must submit written findings and conclusions. If Council denies the appeal, the Sanders have a right to appeal that decision to the Valley County District Court.

2. What is the nature of the application at issue?

FPDP-23-01 proposes to place fill material on 0.48-acres of Appellants' property that lies within the special flood hazard area, 0.15-acres of which are wetlands subject to federal jurisdiction under Section 404 of the Clean Water Act ("CWA"). McCall City Code defines the special flood hazard area as "[t]he land in the floodplain within a community subject to a one percent (1%) or greater chance of flooding in any given year." MCC 9.8.02.

Placing the fill material is necessary for Appellants to remove a portion of their property from the special flood hazard area pursuant to a process administered by the Federal Emergency Management Agency ("FEMA") called a Conditional Letter of Map Revision ("CLOMR") application. In order to submit Appellants' CLOMR application, the McCall City Administrator must acknowledge that the "proposed project meets or is designed to meet all of the community floodplain management requirements . . . and that all necessary Federal, State, and local permits have been, or in the cases of a condition LOMR, will be obtained." Because the Administrator refuses to sign the CLOMR application's acknowledgement, Appellants' plans to obtain a CLOMR and eventually a Letter of Map Revision to revise the effective Flood Insurance Rate Map are stuck in the mud.

[1] The term "jurisdictional wetlands" is used to define wetlands that meet the definition of waters of the United States as that term applies to 33 U.S.C. § 1344(g)(1). *See Sacket v. Envtl. Prot. Agency*, 143 S. Ct. 1322 (2023).

3. What is a Floodplain Development Permit?

Appellants agree that McCall City Code requires a floodplain development permit issued pursuant to MCC 9.08.033 for "any development activities within special flood hazard areas." "Development activities" for purposes of Title IX, Chapter 8 include "the deposition . . . of materials." Because Appellants' proposed activities involve the deposition of materials in the floodplain, a floodplain development permit is required.

4. Why does McCall require Floodplain Development Permits?

Idaho's Disaster Preparedness Act ("Act"), enacted in 1998, gives local governments "primary responsibility for planning, adoption and enforcement of land use regulations to accomplish proper floodplain management." I.C. § 46-1020(c). Pursuant to this authority, the City of McCall adopted Title IX, Chapter 8 of the McCall City Code. By way of having a FEMA-approved floodplain ordinance, property owners in McCall may obtain flood insurance through the National Flood Insurance Program. It should be noted that, one way a property owner can manage flood insurance for their property is to remove a portion of that property from the special flood hazard area through the Letter of Map Revision process. This is exactly what Appellants are seeking to do here. In other words, the Administrator's refusal to sign the CLOMR application, which in all respects complies with all "other applicable regulations," is frustrating the purpose of having a FEMA-approved floodplain ordinance—especially when additional criteria that are not required by that ordinance are imposed on Appellants.

5. What authority does McCall have for its floodplain management ordinance?

Under the Act, "each local government is encouraged to adopt a floodplain map and floodplain management ordinance . . . which requires, at a minimum, that any development in a floodplain must be constructed at a flood protection elevation and/or have adequate floodproofing." I.C. § 46-1022. Additionally, local governments "may regulate all mapped and unmapped floodplains within its jurisdiction" and, subject to certain exceptions, "adopt more restrictive standards" than required by the Act. *Id.* The Act defines "floodplain" as "the land that has been or may be covered by floodwaters, or is surrounded by floodwater and inaccessible, during the occurrence of the regulatory flood." In general terms, any land that is subject to a 1% chance of inundation in any given year is within a floodplain.

As expressed in its declared purposes and implicit throughout the Act, "orderly development and wise use of floodplains" is concomitant with "prevent[ing] increased flooding and erosion caused by improper development." McCall City Code embodies these purposes by permitting floodplain development that complies with the criteria set forth in Title IX, Chapter 8. Indeed, Appellants do not dispute that McCall has authority to regulate development in floodplains. Rather, Appellants contend that McCall is arbitrarily applying criteria to FPDP-23-01 that by the unambiguous provisions of the McCall City Code do not apply to the proposed floodplain development.

Indeed, the issue is not whether McCall has authority to regulate floodplain development, but whether applying the provisions of Title IX, Chapter 8 as written 1) require a building permit in addition to a floodplain development permit and 2) even if a building permit is required, whether a finding of "harm" to deny FPDP-23-01 is lawful. As such, it is Appellants' position that the *only* local permit required to place the proposed fill material on their property is a floodplain development permit because no constructing or erecting buildings or other structures is proposed by FPDP-23-01. Alternatively, Appellants contend that there cannot be a finding of "harm," as that term is defined by the Shoreline and River Environs Zone ordinance because a Section 404 permit is both required and has been issued. Arguments supporting these positions are set forth in Appellants' Opening Supplemental Brief in Support of Granting FPDP-23-01; Appellants' Notice of Appeal, dated November 17, 2023; Appellants' Notice of Appeal, dated April 10, 2023, and Letter to Brian Parker from Steve Millemann, dated September 2, 2022 all of which are in the record on appeal.

6. Why is the Council hearing this matter, and how did it get to us?

April 11, 2022 – U.S. Army Corp of Engineers issues 12-month extension for Appellants' Section 404 permit that was originally granted on September 1, 2020.

December 7, 2022 – Appellants presented a CLOMR application and supporting documents to the Administrator, seeking his acknowledgement on the application.

January 23, 2023 – Appellants applied for FPDP-23-01 to place 0.48-acres of fill material on their property as part of the CLOMR application—which starts the process of removing that portion of their property from the special flood hazard area.

March 31, 2023 – Administrator denies the application for FPDP-23-01 because a building permit cannot be issued for the proposed activities due to the Administrator's finding of "harm."

April 10, 2023 – Appellants give Notice of Appeal to the Administrator's denial of FPDP-23-01.

September 12, 2023 – McCall Area Planning & Zoning Commission hears appeal of the Administrator's denial of FPDP-23-01.

October 3, 2023 – Appellants provide City staff with written objections to the draft Findings of Fact, Conclusions of Law, and Decision for FPDP-23-01.

November 13, 2023 – P&Z issues signed Findings of Fact, Conclusions of Law, and Decision upholding the Administrative denial of FPDP-23-01.

November 17, 2023 – Appellant's provide a Notice of Appeal of P&Z's denial of FPDP-23-01.

December 8, 2023 – U.S. Army Corp of Engineers re-issues Appellants' Section 404 permit, which includes as a requirement that Sanders Property Rivers Crossing Subdivisions Mitigation Plan dated October 17, 2023.

February 8, 2024 – City Council hears appeal of P&Z's denial of FPDP-23-01 and requests supplemental briefing from both Appellants and the City Attorney.

March 1, 2024 – First round of supplemental briefing submitted by Appellants and the City Attorney.

March 19, 2024 – Second round of supplemental briefing submitted by Appellants.

7. Who is the City's Floodplain Administrator?

The City Planner is the "Floodplain Administrator." MCC 9.8.041.

8. Why was the FPDP denied?

FPDP-23-01 was denied because the Administrator and P&Z believed (erroneously) that the proposed placement of fill material into jurisdictional wetlands required a building permit, and that a building permit could not be issued because under the Shoreline and River Environs Zone ordinance, the placing of fill created "harm" to jurisdictional wetlands. To be very clear, Appellants contend that the plain language of the McCall City Code does not require a building permit for the specific activities proposed in FPDP-23-01. However, and without waiving that argument, Appellants also contend that even if a building permit is required, the Administrator's and P&Z's denials based on a finding of "harm" to jurisdiction wetlands are unsupported by the record below and unlawful because Idaho law bars the City of McCall from regulating jurisdictional wetlands in the way it is doing here.

Specifically, both denials below applied three of the definitions of "harm" found in MCC 3.7.023(C)(2)(b), (c), and (d). They did so without regard for MCC 3.7.023(B)(3), which unambiguously states that a permit ***can be issued*** to fill jurisdiction wetlands provided that a Section 404 permit is obtained and complied with:

> No . . . building permit shall be issued, nor is any development, grading, alteration of any land within this zone permitted, unless the applicant establishes . . . that a section 404 permit has been issued or is forthcoming by the corps of engineers . . . city approval(s) under this title and title IX of this code are contingent upon all applicable section 404 permit requirements being met; if a permit requirement is not met, the city may revoke its approval(s) under this title and title IX of this code.

The Administrator's and P&Z's denials not only wholly ignore this provision of the McCall City Code but fails to acknowledge that if "all applicable section 404 permit requirements" are met, there is no "harm" to jurisdiction wetlands. Indeed, the Sanders permit requires that 0.30-acres of jurisdictional wetlands be established adjacent to and on the same property as the 0.15-acres in jurisdictional wetlands that FPDP-23-01 proposes to fill. Moreover, the Section 404 permit also requires monitoring and reporting to ensure that new jurisdictional wetlands are in fact established on the property. There can be no "harm" because the three bases in MCC 3.7.023(C)(2) relied upon by the Administrator and P&Z are the same activities that trigger the requirement of a Section 404 permit when such activities occur in jurisdictional wetlands.

Consequently, the Administrator's and P&Z' decisions—and the Memo—imprecisely define wetlands in the McCall City Code. If the prohibition was meant to apply to ***all*** wetlands

within City limits, there would be no need to carve out the exception that city approval is "contingent upon all applicable section 404 permit requirements being met." Clearly, McCall City Code recognizes wetlands that are subject to federal jurisdiction and wetlands that are not. Unconditionally defining harm as placing fill in jurisdictional wetlands pursuant to a Section 404 permit reads the plain text of MCC 3.7.023(B)(3) into oblivion.

Next, the Administrator's and P&Z's reasoning that FPDP-23-01 constitutes "[e]xcessive site grading and disturbance beyond the minimum necessary for development" under MCC 3.8.23(D) is absurd. Development as defined in Title III is "[a]ny activity that changes the existing character or use of land upon which such construction or activity occurs." Thus, the minimum disturbance necessary would be that which is required to accomplish the purpose of the development. Here, the purpose of the activity is to place fill on 0.48-acres of Appellants' property to remove that portion of the property out of the special flood hazard area in aid of the CLOMR process. With the purpose of the activity defined, the minimum disturbance necessary for development is the placing of 0.48-acres of fill material. Accordingly, even assuming that MCC 3.8.23(D) applies to FPDP-23-01, the proposed activity does not run afoul of the prohibition on excessive site disturbance.

Finally, the Administrator's and P&Z's denial refers to several provisions in Title IX, Chapter 8 that clearly require compliance with "other applicable regulations" prior to issuance of a floodplain development permit. *See* MCC 9.8.031; 9.8.035; and 9.8.038. As Appellants have explained in their Notice of Appeal, Opening Supplemental Brief, and this Reply, there are no other applicable regulations to FPDP-23-01 in the local ordinances other than a floodplain development permit, and even if there are, those requirements have all been met based on the record made below.

9. Do the McCall Floodplain Management Ordinances violate the Constitution?

Appellants' position that imposing requirements beyond those of the federal Clean Water Act on jurisdictional wetlands violates Idaho law is explained in the Notice of Appeal, dated November 17, 2023, and Appellants' Opening Supplemental Brief in Support of Granting FPDP-23-01. This issue is not a red herring, but it is a question of law that the City of McCall must contend with, should it continue to deny FPDP-23-01, even if the proposed activities are authorized by both federal and state law.

The Memo's conclusion that Idaho Code § 46-1020 et seq. disposes of this issue is wrong. Idaho's Disaster Preparedness Act certainly authorizes local governments to regulate floodplain development. However, "[a] basic tenet of statutory construction is that the more specific statute or section addressing the issue controls over the statute that is more general. Thus, the more general statute should not be interpreted as encompassing an area already covered by one which is more specific." *Valiant Idaho, LLC v. JV L.L.C.*, 164 Idaho 280, 289 (2018). Here, Idaho Code § 46-1022 is the more general statute because it broadly permits local governments to adopt and regulate floodplain development. This presumably includes the ability of local governments to regulate

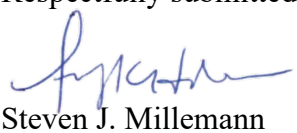
wetlands within a floodplain. However, that does not end the analysis because certain wetlands are subject to regulation under the CWA—that is, because they are waters of the United States.

Idaho Code § 39-3601 deals specifically with regulations and requirements imposed on waters of the United States and unambiguously prohibits imposing requirements on waters of the United States that are "beyond those of the federal clean water act." Thus, with respect to jurisdictional wetlands within floodplains, there is a specific statute that dictates the standards by which they can be regulated. The inescapable conclusion—which is also expressly stated in MCC 3.7.023(B)(2)—is that if a Section 404 permit is required, it is sufficient to protect waters of the United States, and any local government action imposing more onerous requirements on such permit contravenes the policy and legislative intent of Idaho law implementing the CWA.

III. CONCLUSION

Because FPDP-23-01 meets all applicable requirements for a floodplain development permit under McCall City Code, the decisions below must be reversed, and FPDP-23-01 granted.

Respectfully submitted,



Steven J. Millemann
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Subject: McCall City Council
From: Brian Parker, City Planner, Floodplain Administrator
Date: February 8, 2024

The intention of this Memorandum is to provide details on the appeal of the denial of FPDP-23-01.

Background

The Sanders (the applicant) is proposing to place fill on land within the Area of Special Flood Hazard on Lot 19, Block 2, River's Crossing Subdivision. Staff issued an Administrative Denial of the application on March 31, 2023. The applicant appealed the administrative decision to the McCall Area Planning & Zoning Commission, who upon conducting a properly noticed public hearing on September 12, 2023, voted 4-1 to uphold the Administrative Denial. The Findings of Fact, Conclusions of Law, and Decision document of the McCall Area Planning & Zoning Commission's decision was adopted by the McCall Area Planning & Zoning Commission on November 7, 2023. The applicant appealed the decision of the McCall Area Planning & Zoning Commission on November 17, 2023.

Summary Recommendation

The applicant's appeal of the administrative denial of FPDP-23-01 should be denied because:

1. The proposed development under the subject Flood Plain Development Permit (FPDP) involves "grading" and filling areas within the Area of Special Flood Hazard, which is also designated as wetlands, and therefore requires a building permit from the City.
2. The City cannot issue a building permit if the proposed action will result in harm within the Shoreline and River Environs Zone.
3. The definition of harm under McCall City Code includes:

   > "The removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high-water mark, the land below the same, or the immediate upland edge;
   >
   > The filling or dredging of lake bottom or wetlands;"

4. Because the proposed development will result in "harm" to the wetlands, a building permit cannot be issued.
5. Because a building permit cannot be issued, the FPDP must also be denied.

Documents to be Admitted to the Record

Document Name	Date

Floodplain development permit application (FPDP-23-01)	January 23, 2023
Narrative attached to floodplain development permit application	January 23, 2023
Plot plan attached to floodplain development permit application	January 23, 2023
Terrain profile of proposed fill attached to floodplain development permit application	January 23, 2023
Administrative Denial of FPDP-23-01	March 31, 2023
Notice of Appeal of Administrative Denial of FPDP-23-01	April 10 ,2023
Memo from Patrick Wickman of Forsgren Associates Inc., and associated attachments	July 17, 2023
Staff memo to McCall Area Planning & Zoning Commission regarding appeal of Administrative Denial of FPDP-23-01	September 12, 2023
Minutes of September 12, 2023 McCall Area Planning & Zoning Commission meeting	September 12, 2023
McCall Area Planning & Zoning Commission Findings of Fact, Conclusions of Law, and Decision upholding Administrative Denial of FPDP-23-01	November 7, 2023
Notice of Appeal of McCall Area Planning & Zoning Commission's Decision to uphold Administrative Denial of FPDP-23-01	November 17, 2023
McCall City Council Findings of Fact, Conclusions of Law, and Decision for the denial of VAR-20-01	February 25, 2021
Application Materials associated with VAR-20-01	July 21, 2020

Facts

1. **The subject property is within the City of McCall and Titles III and IX, McCall City Code are applicable.**

The floodplain development permit identifies the subject property as Lot 19, Block 2 of River's Crossing Subdivision. The face of the plat of River's Crossing Subdivision identifies that the subdivision is located within the City of McCall.

McCall City Code Section 3.1.03 states that "This title applies to all land within the boundaries of the city of McCall, and to all land within the boundaries of the city of McCall area of city impact, both of which areas are commonly referred to together in this title as the planning jurisdiction, including, but not limited to, any lands that may after March 16, 2006, become part of the city of McCall or of the impact area."

McCall City Code Section 9.1.03 states that “This title applies to all land within the boundaries of the city of McCall, and to all land within the boundaries of the city of McCall area of city impact, both of which areas are commonly referred to together in this title as the "planning jurisdiction", including any lands that may become part of the city of McCall or of the impact area.”

2. A floodplain development permit is required for the alteration of lands within the area of special flood hazard.

McCall City Code Section 9.8.043(A)(1) states that “Application for a floodplain development permit shall be made to the Floodplain Administrator prior to any development activities located within special flood hazard areas.”

The McCall City Planner is the Floodplain Administrator, pursuant to McCall City Code Section 9.8.041.

“Development” is defined in McCall City Code Section 9.8.02 as “Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, **filling, grading**, paving, excavation or drilling operations, or storage of equipment or materials.”

“Development Activity” is defined in McCall City Code Section 9.8.02 as “Any activity defined as development which will necessitate a floodplain development permit; such as: the construction of buildings, structures, or accessory structures; additions or substantial improvements to existing structures; bulkheads, retaining walls, piers, and pools; the placement of mobile homes; **or the deposition or extraction of materials; the construction or elevation of dikes, berms and levees**.” (Emphasis Added).

3. The applicant is proposing to conduct development activities within the area of special flood hazard (ASFH).

McCall City Code Section 9.8.02 defines the “Special Flood Hazard Area (SFHA)” as “The land in the floodplain within a community subject to a one percent (1%) or greater chance of flooding in any given year. For purposes of these regulations, the term "special flood hazard area" is synonymous in meaning with the phrase "area of special flood hazard".”

The Federal Emergency Management Agency (FEMA) published Flood Insurance Rate Map Number 16085C0688C on February 1, 2019. The site of the proposed development is shown on this map as being within the AE Special Flood Hazard Area.

The floodplain development permit applications states that excavation, placement of fill material, and grading are proposed.

The narrative attached to the floodplain development permit application states “The placement of fill requires a Floodplain Development Permit under MCC 9.8.043 because it is within the definition of a “Development Activity” under MCC 9.8.02.”

The plot plan attached to the floodplain development permit application identifies locations where fill is proposed to be placed within the ASFH.

The terrain profile attached to the floodplain development permit application identifies that fill would be placed within the ASFH.

4. A floodplain development permit may only be issued if all applicable local, State, and Federal permits have been received and included within the floodplain development permit application.

McCall City Code Section 9.8.043(A)(1) states (underline added):

Application Requirements: Application for a floodplain development permit shall be made to the Floodplain Administrator prior to any development activities located within special flood hazard areas. The following items shall be presented to the Floodplain Administrator to apply for a floodplain development permit:

(a) A plot plan drawn to scale which shall include, but shall not be limited to, the following specific details of the proposed floodplain development:

(1) The nature, location, dimensions, and elevations of the area of development/disturbance; existing and proposed structures, utility systems, grading/pavement areas, fill materials, storage areas, drainage facilities, and other development;

(2) The boundary of the special flood hazard area as delineated on the FIRM or other flood map as determined in section 9.8.032 of this chapter, or a statement that the entire lot is within the special flood hazard area;

(3) The flood zone(s) designation of the proposed development area as determined on the FIRM or other flood map as determined in section 9.8.032 of this chapter;

(4) The boundary of the floodway(s) as determined in section 9.8.032 of this chapter;

(5) The base flood elevation (BFE) where provided as set forth in section 9.8.032, 9.8.033, or 9.8.053 of this chapter;

(6) The old and new location of any watercourse that will be altered or relocated as a result of proposed development; and

(b) Proposed elevation, and method thereof, of all development within a special flood hazard area including but not limited to:

(1) Elevation in relation to mean sea level of the proposed lowest floor (including basement) of all structures;

(2) Elevation in relation to mean sea level to which any non- residential structure in Zone A, AE, AH, AO, or A1-30 will be floodproofed; and

(3) Elevation in relation to mean sea level to which any proposed utility equipment and machinery will be elevated or floodproofed.

(c) If floodproofing, a Floodproofing Certificate (FEMA Form 086-0-33) with supporting data, an operational plan, and an inspection and maintenance plan that include, but are not limited to, installation, exercise, and maintenance of floodproofing measures will be required prior to Certificate of Occupancy/Completion.

(d) A Foundation Plan, drawn to scale, which shall include details of the proposed foundation system to ensure all provisions of this chapter are met. These details include but are not limited to:

(1) The proposed method of elevation, if applicable (i.e., fill, solid foundation perimeter wall, solid backfilled foundation, open foundation, or on columns/posts/piers/piles/shear walls); and

(2) Openings to facilitate automatic equalization of hydrostatic flood forces on walls in accordance with subsection 9.8.051(A)8(b) of this chapter when solid foundation perimeter walls are used in Zones A, AE, AH, AO, and A1-30.

(e) Usage details of any enclosed areas below the lowest floor.

(f) Plans and/or details for the protection of public utilities and facilities such as sewer, gas, electrical, and water systems to be located and constructed to minimize flood damage.

(g) Certification that all other **local**, State, and Federal permits required prior to floodplain development permit issuance have been received.

(h) Documentation for placement of recreational vehicles and/or temporary structures, when applicable, to ensure that the provisions of subsections 9.8.052(A)5 and (A)6 of this chapter are met.

(i) A description of proposed watercourse alteration or relocation, when applicable, including an engineering report on the effects of the proposed project on the flood-carrying capacity of the watercourse and the effects to properties located both upstream and downstream; and

(j) A map (if not shown on plot plan) showing the location of the proposed watercourse alteration or relocation. (Emphasis Added).

5. Compliance with all applicable City Codes is required.

McCall City Code Section 9.8.034 states that "No structure or land shall hereafter be located, extended, converted, altered, or developed in any way without full compliance with the terms of this chapter and other applicable regulations."

McCall City Code Section 9.8.035 states that "This chapter shall not in any way repeal, abrogate, impair, or remove the necessity of compliance with any other laws, ordinances, regulations, easements, covenants, or deed restrictions, etcetera. However, where this chapter and another conflict or overlap, whichever imposes more stringent or greater restrictions shall control."

6. The requirements of Chapter 8, Title III are applicable.

McCall City Code Section 3.8.01 states "The requirements of this chapter apply to all zones."

McCall City Code Section 3.8.01(A) states "Compliance Required; Nuisance Prohibited: No development shall be permitted or authorized to be established or maintained which is a nuisance or otherwise does not comply with all applicable local, state and federal laws and regulations."

McCall City Code Section 3.2.02 defines "Development" as "Any construction or activity that changes the existing character or use of land upon which such construction or activity occurs."

The subject property is within the R8 – Medium Density Residential zoning district of the City of McCall. Pursuant to McCall City Code Section 3.8.01, the requirements of Chapter 8, Title III apply. The applicant is proposing to conduct activities that will change the existing character of the subject property.

7. A building permit is required prior to conducting development activities.

McCall City Code Section 3.8.02(G) states "Building Permit Required: Until a valid building permit has been issued by the city of McCall, no construction work, including grading, blasting, filling, trenching, tree removal, etc., may be started, except as permitted in section 3.8.03 of this chapter."

McCall City Code Section 3.8.03 states:

(A) Purpose: The existing forest in the McCall area, including the city jurisdiction and the McCall area of city impact, is considered a public resource. The purpose of these requirements is to protect that public resource in fulfillment of the McCall area comprehensive plan goals and policies:

1. Maintain and increase McCall's urban forest as a key component of the green infrastructure network with economic and social benefits.
2. Achieve no net loss of tree canopy coverage and strive to increase the overall tree canopy to reduce storm runoff, absorb air pollutants, reduce noise, stabilize soil, and provide habitat.
3. Maintain McCall's heritage trees.
4. Preserve, to the extent reasonable, native vegetation consistent with ensuring wildland fire defensible space.
5. Strengthen incentives and requirements for tree preservation for new development.
6. Improve forest health through selective thinning and using best forest management practices and guidelines.

(B) Tree Removal Limitations:

1. Any tree equal to or larger than twelve inches (12") DBH (Diameter at Breast Height 54") shall require the written approval of the city arborist.
2. Any thinning of smaller trees in excess of twenty percent (20%) of the total stem count on the property shall require a consultation by the city arborist.
3. Following issuance of a building permit or written pre-building permit approval by the city arborist, tree removal is permitted within the area of the building footprint, other structures, driveways, and other improvements, and in accord with section 3.8.04, "Fire Hazard Mitigation Standards", of this chapter.
4. Development of the lot should endeavor to preserve standing, healthy trees outside the area occupied by improvements.
5. Salvage of dead, dying, or hazardous timber and removal of brush and timber for fire safety shall be allowed.

(C) Slash, Logging Debris: Slash, long butts, cull logs, and logging debris shall not be accumulated or piled within view of a roadway. All such debris shall either be removed to an approved location for disposal, burned (with proper permits), or converted to mulch.

(D) Limitations On Timber Harvest: Timber harvest is prohibited except under the following conditions:

1. A property owner has first obtained a conditional use permit for such harvest;
2. Within road rights of way, timber harvest by or under contract with the public agency having jurisdiction of the right of way.
3. By a developer as required for road or utility construction in connection with a subdivision having at least preliminary plat approval, as required for survey or engineering or to remove dead or dying trees with the approval of the city arborist.

4. On public state lands as provided in subsection (E) of this section.

(E) Harvesting Without Permit; Procedure: Timber harvest from state endowment lands is permitted after review and consultation with the city and without a conditional use permit as follows:

1. Notice of a proposed timber sale or other logging contract shall be given to the clerk by the department of lands at least sixty (60) days before the publication of invitation to bid upon the sale, or creation of contract rights in a logger, whichever first occurs; thereafter the clerk shall forward the notice and supporting materials to the planning and zoning commission, which, if it chooses to do so, may hold a public hearing on the question of the appropriate city response to the proposed state action. The commission may request additional information.

2. The council, upon receiving the recommendations of the commission in this regard, may, if it chooses to do so, hold a second public hearing on the question of the city response to the proposed state action. The council may request additional information. Following such consideration by the council as it deems appropriate, a statement of council's concerns and recommendations may be approved for transmittal to the department of lands.

3. Public notice of any such public hearing under this subsection shall be given by publication as provided in chapter 15, "Procedures, Appeals And Actions", of this title.

4. The department shall not enter into the timber sale or other logging contract without first implementing or otherwise responding point by point, in writing, delivered to the city manager, to the council's statement of concerns and recommendations.

5. Notice of a sale which is classed as a "direct sale" under present rules of the department of lands, that is, one hundred thousand (100,000) or fewer board feet, by negotiated sale for ten thousand dollars ($10,000.00) or less, and respecting certain trees the market value of which would be lost in the event of any appreciable delay, shall be timely if furnished to the clerk fifteen (15) or more days before the signing of a contract for such sale; and the clerk shall bring the matter directly to the attention of council at its next meeting.

No tree removal or timber harvest is proposed with this application, nor does McCall City Code Section 3.8.03 permit any of the development proposed within this floodplain development permit application. As such, a building permit is required.

8. A determination that the proposed site grading will be the minimum necessary for development cannot be made.

McCall City Code Section 3.8.23(D) states that “Site grading shall follow the natural terrain of the land and be the minimum necessary for development of the site as determined by the Administrator and Public Works Director.”

As no additional development beyond grading, excavation, and the placement of fill is identified, an appropriate amount of site grading cannot be identified.

9. No building permit may be issued for development within the Shoreline and River Environs Overlay Zone without demonstrated compliance with requirements of McCall City Code.

McCall City Code Section 3.7.023(B) states:

Permit Criteria: No conditional use or building permit shall be issued, nor is any development, grading, or alteration of any land within this zone permitted, unless the applicant establishes to the satisfaction of the commission and council in the case of a conditional use, or of the administrator in the case of a building permit, that:

1. The proposed development **meets all applicable requirements of this title and title IX of this code**.
2. The plans accurately identify the water pool shore contours and high water marks, which, in the case of river environs, shall mean the limits of the area of special flood hazard.
3. A letter is on file from a specialist certified by the United States army corps of engineers wetlands expert that certifies that no wetlands related issues or issues related to fill of navigable waters issues were presented by the proposed development; or that a section 404 permit has been issued or is forthcoming by the corps of engineers, whichever is appropriate, city approval(s) under this title and title IX of this code are contingent upon all applicable section 404 permit requirements being met; if a permit requirement is not met, the city may revoke its approval(s) under this title and title IX of this code.
4. The requirements of the underlying zone are met.
5. The fifty foot (50') building setback line is met per subsection (C)3(c) of this section.
6. Proof of stormwater certification training has been provided by the individual applying for the building permit.

10. The water pool shore contours and high water marks in the area adjacent to the North Fork of the Payette River is the boundary of the ASFH.

McCall City Code Section 3.7.021 (B) identifies the lands between the water pool shore contour of the North Fork of the Payette River and a line parallel to and 150 feet away from the water pool shore contour or high water mark as lands included within the Shoreline and River Environs Overlay Zone.

McCall City Code Section 3.7.023(B)(2) establishes that the water pool shore contour or high water mark for areas adjacent to the North Fork of the Payette River is to be defined as the ASFH.

11. The proposed development is within 150 feet of the ASFH.

The terrain profile attached to the floodplain development permit indicates that fill will be placed above, over, and below the boundary of the ASFH.

12. The proposed development is within the Shoreline and River Environs Overlay Zone.

As the areas within 150 of the ASFH are within the Shoreline and River Environs Overlay Zone, and the proposed development is within 150 feet of the Shoreline and River Environs Overlay Zone, the applicable regulations of McCall City Code Sections 3.7.02-3.7.023 apply.

13. The proposed development includes the placement of fill within 0.15 acres of wetlands.

The narrative attached to the floodplain development permit application states “The activity for which the Permit is sought will be the placement of imported fill into .48 acres of the Property, of which .15 acres is delineated Shrub/Scrub wetlands.”

14. Harm to wetlands is prohibited within the Shoreline and River Environs Overlay Zone.

McCall City Code Section 3.7.023(B) requires that “any development, grading, or alteration of any land” within the Shoreline and River Environs Overlay Zone that “the proposed development meets all applicable requirements” of Titles III and IX of McCall Code.

McCall City Code Section 3.7.023(C)(1) states (underline added):

> Prohibitions: No construction, alteration or activity shall cause harm to:
>
> a. Water quality.
>
> b. Fish and aquatic habitats.
>
> c. Wetlands.
>
> d. Significant wildlife habitat harboring any threatened or endangered species.
>
> e. Views of, from, or across a lake or river.
>
> f. To this end, all applications for building permits within this overlay zone, no matter what the permit may be for, shall be accompanied by a plan for the installation of appropriate natural, storm, and melt water drainage and treatment facilities. Such plans for natural, storm and melt water drainage of the property and on and through the property, shall be consistent with best management practices under state and federal storm and melt water regulatory programs to which the city is subject and consistent with other city programs in these regards to the satisfaction of the city.

McCall City Code Section 3.7.023(C)(2) provides a specific definition of “harm” for the purposes of interpreting McCall City Code Section 3.7.023(C)(1) (underline added):

> Harm Defined: "Harm" for these purposes means:
>
> a. The creation of conditions which foster runoff of, or other source of fertilizers, toxic substances, or other pollutants or contaminants, into the water;
>
> b. The excessive clearing of natural vegetation or change of natural landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line;
>
> c. The removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge;
>
> d. The filling or dredging of lake bottom or wetlands;
>
> e. The erection of visual barriers between the lake or river and the roads on the uplands, beyond the extent reasonably necessary for an owner's usage of the land for a permitted use; or
>
> f. The creation of any other condition which would be inconsistent with best management practices under, or threaten a violation of, state and federal storm and melt water regulatory programs to which the city is subject, or fail otherwise to be consistent with other city programs in these regards, all as established to the satisfaction of the city.

15. **The proposed development includes the destruction of features of the water pool shore contour or high water mark, as well as land below the water pool shore contour or high water mark.**

The plot plan attached to the floodplain development permit application identifies areas of the water pool shore contour or high water mark and lands below the water pool shore contour or high water mark to be covered with fill.

16. The destruction of features of the water pool shore contour or high water mark, as well as land below the water pool shore contour or high water mark is considered harm.

McCall City Code Section 3.7.023(B) requires that "any development, grading, or alteration of any land" within the Shoreline and River Environs Overlay Zone that "the proposed development meets all applicable requirements" of Titles III and IX of McCall Code.

McCall City Code Section 3.7.023(C)(1) states:

> Prohibitions: No construction, alteration or activity shall cause harm to:
>
> a. Water quality.
>
> b. Fish and aquatic habitats.
>
> c. Wetlands.
>
> d. Significant wildlife habitat harboring any threatened or endangered species.
>
> e. Views of, from, or across a lake or river.
>
> f. To this end, all applications for building permits within this overlay zone, no matter what the permit may be for, shall be accompanied by a plan for the installation of appropriate natural, storm, and melt water drainage and treatment facilities. Such plans for natural, storm and melt water drainage of the property and on and through the property, shall be consistent with best management practices under state and federal storm and melt water regulatory programs to which the city is subject and consistent with other city programs in these regards to the satisfaction of the city.

McCall City Code Section 3.7.023(C)(2) provides a specific definition of "harm" for the purposes of interpreting McCall City Code Section 3.7.023(C)(1) (underline added):

> Harm Defined: <u>"Harm" for these purposes means</u>:
>
> a. The creation of conditions which foster runoff of, or other source of fertilizers, toxic substances, or other pollutants or contaminants, into the water;
>
> b. The excessive clearing of natural vegetation or change of natural landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line;
>
> c. <u>The removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge;</u>
>
> d. The filling or dredging of lake bottom or wetlands;
>
> e. The erection of visual barriers between the lake or river and the roads on the uplands, beyond the extent reasonably necessary for an owner's usage of the land for a permitted use; or
>
> f. The creation of any other condition which would be inconsistent with best management practices under, or threaten a violation of, state and federal storm and melt water

regulatory programs to which the city is subject, or fail otherwise to be consistent with other city programs in these regards, all as established to the satisfaction of the city.

17. **Excessive clearing of natural vegetation or change of landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line is considered harm.**

McCall City Code Section 3.7.023(C)(2) provides a specific definition of "harm" for the purposes of interpreting McCall City Code Section 3.7.023(C)(1) (underline added):

Harm Defined: "Harm" for these purposes means:

a. The creation of conditions which foster runoff of, or other source of fertilizers, toxic substances, or other pollutants or contaminants, into the water;

b. The excessive clearing of natural vegetation or change of natural landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line;

c. The removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge;

d. The filling or dredging of lake bottom or wetlands;

e. The erection of visual barriers between the lake or river and the roads on the uplands, beyond the extent reasonably necessary for an owner's usage of the land for a permitted use; or

f. The creation of any other condition which would be inconsistent with best management practices under, or threaten a violation of, state and federal storm and melt water regulatory programs to which the city is subject, or fail otherwise to be consistent with other city programs in these regards, all as established to the satisfaction of the city.

18. **The applicant is proposing to change landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line.**

The terrain profile attached to the floodplain development permit application indicates that fill will be placed above, over, and below the water pool shore contour or high water mark.

19. **The applicant has stated no construction of any structure or any development beyond the placement of fill is proposed at this time.**

The floodplain development permit application states that no structures are proposed to be constructed.

20. **The subject property has a buildable envelope of approximately 6,400 square feet without modifying the water pool shore contour or high water mark.**

The narrative attached to the floodplain development permit application states "The Property was the subject of a variance application which was denied by the McCall City Council." An exhibit provided with the aforementioned variance application identified an area of approximately 6,400 square feet that could be built upon without modification of the water pool shore contour or high water mark.

21. **A determination that excessive clearing or change of landforms within the area between the water pool shore contour or high water mark will not occur cannot be made.**

As no additional development beyond grading, excavation, and the placement of fill is identified, an appropriate amount of clearing cannot be identified.

22. **Construction, alteration, and activity that causes harm is prohibited within the Shoreline and River Environs Overlay Zone.**

McCall City Code Section 3.7.023(C)(1) states:

> Prohibitions: No construction, alteration or activity shall cause harm to:
>
> a. Water quality.
> b. Fish and aquatic habitats.
> c. Wetlands.
> d. Significant wildlife habitat harboring any threatened or endangered species.
> e. Views of, from, or across a lake or river.
> f. To this end, all applications for building permits within this overlay zone, no matter what the permit may be for, shall be accompanied by a plan for the installation of appropriate natural, storm, and melt water drainage and treatment facilities. Such plans for natural, storm and melt water drainage of the property and on and through the property, shall be consistent with best management practices under state and federal storm and melt water regulatory programs to which the city is subject and consistent with other city programs in these regards to the satisfaction of the city.

Administrative Decision

Based upon the facts presented above, the issuance of a floodplain development permit for the proposed development activity cannot be issued.

PUBLIC NOTICE

ing grant funding from the Waterways Improvement Fund (WIF) to purchase a jet boat enabling them to create a safer boating environment in Valley County. The Sheriff's Office will trade in their current boat and use the funds as a match for the grant. Valley County Sheriff's Office is applying for $65,000 from the WIF program.

If you have any comments or questions related to these projects or the applications, please contact Makenzie Castor, Grant Writer, at (208) 382-7137 or mcastor@co.valley.id.us.

Deadline for comments is January 24, 2024.
Published in The Star-News January 11, 18, 2024.

1828000

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1 INVITATION TO BID

The City of McCall is accepting sealed bids for the Davis Ave Reconstruction Phase 2 Project. All separate, sealed bids will be received at www.horrocksplanroom.com , until **11:00 a.m.** local time on **Thursday, February 1, 2024.** That same day, all received bids will be opened virtually and read aloud at 11:15 a.m. via Microsoft Teams. Bid opening information will be sent out to all Contractors on the plan holders list by Wednesday, January 31, 2024. Bids not received by the indicated time will not be opened.

The work of this contract generally includes roadway improvements on Davis Avenue from Blue Water Circle to Lick Creek Road . Bid alternates include a new paved City parking lot, PVC and/or HDPE water main pipe substitution, and a separated pedestrian path. The roadway improvements include cement recycled asphalt base stabilization (CRABS) pavement rehabilitation of the existing roadway and widening of the road section for bike lanes. Additional roadwork includes installation of stormwater inlets and piping, driveway culverts, drainage ditches, striping, and traffic signs. The project also includes installation of a new 12-inch potable water main and a 16-inch raw water main in Davis Avenue and replacement of all water services, water meters, and fire hydrants.

A non-mandatory virtual pre-bid Meeting will be held on **Thursday , January 18, 2024** at 1:30 p.m. MST. Those wanting to attend in person can meet at Legion Hall, located below City Hall at 216 E. Park St, McCall, ID 83638. There will also be an opportunity to walk the project site following the pre-bid meeting. Virtual meeting information will be sent out to all Contractors on the plan holders list by Wednesday, January 17, 2024. All potential bidders are encouraged to attend.

Bids must be accompanied by Bid Security in the form of a bid bond, certified check, cashier's check, or cash in the amount not less than 5% of the total bid amount, payable to the City of McCall. Proof of Bid Security must be submitted with the official bid documents. Said Bid Security shall be forfeited to the Owner as liquidated damages should the successful bidder fail to enter into a contract in accordance with their proposal as specified in the instructions to Bidders. The City of McCall reserves the right to reject any or all proposals.

Complete project bidding documents and plans will be available at www.horrocksplanroom.com by 5:00 pm on January 9, 2024. Bidding documents and plans may be downloaded, at no cost, by searching Davis Ave Reconstruction Phase 2 Project on the website's Public Jobs page . Please contact Elizabeth Harvey at (435) 650-6935 or elizabethh@horrocks.com for assistance with registration, downloading, and working with this digital project information.

Neither the Engineer, Project Manager nor Owner shall be held responsible for any oral instruction. All questions or requests for additional information must be submitted in writing to the City's engineering consultant, no later than 5:00 pm on **Monday, January 22, 2024** . Any changes to the Plan and Specifications will be in the form of a written addendum which will be made available to all plan holders by Close of Business on **Friday, January 26, 2024** . Please contact Tyson Larson at 208-791-6776 or tyson.larson@horrocks.com with any project related questions.

Published in The Star-News January 11, 18, 25, 2024.

1838640

PUBLIC NOTICE

In accordance with IDAPA 15.10.01.011.05 ("ISLD Rule" 011.05), the Idaho State Liquor Division (ISLD) hereby gives public notice that it is considering the relocation of the existing contract liquor store located at 112 N. Main St. in Riggins, Idaho. The store will continue to be operated as a Contract Store as defined in ISLD Rule 004. The desired location of said Contract Store is described as:

Within the retail trade area of Riggins, County of Idaho, State of Idaho.

Please note that Idaho Statute 23-303 asserts that no liquor store shall be located within 300 feet of a school.

If interested in being considered to operate a Contract Store in the Riggins area, you may inquire about or request an application by e-mailing the Idaho State Liquor Division:

Sally.ray@liquor.idaho.gov

Applications will be considered by the ISLD Director in accordance with ISLD Rule 011.06. Completed applications must be received no later than 5:00 p.m. on January 26, 2024
Published in The Star-News January 11, 18, 25, 2024.

1839780

PUBLIC NOTICE

NOTICE OF SHERIFF'S SALE

BY VIRTUE of a Writ of Execution in my hands, issued out of the Magistrate Court of the Fourth Judicial District, of the State of Idaho, in and for the County of Valley in the suit of *Clark & Associates, Attorneys at Law v. Ringel, et al, Case No. CV43-23-00253* , duly attested November 24, 2023, I have levied upon all the right, title, and interest of the said judgment debtor FREDRICK SHANE RINGEL in and to the following described property, situated in Valley County, Idaho, viz:

The Defendant Frederick Shane Ringel's Interest in 3.4917 acres, legally described as TAX NO 2 IN S 1/2 SE S6 T11N R4E, located at 80 Bacon Creek Rd., Cascade, Idaho, 83611, to satisfy the amount of **$2,355.39,** plus interest due and owing under the foregoing judgments.

NOTICE: The judgment debtor or redemptioner may redeem the property from the purchaser within six (6) months after the sale if the real property sold consisted of a tract of land of twenty (20) acres or less, on paying the purchaser the amount of his purchase with interest thereon at the rate allowed in section 28-22-104(1), Idaho Code, from the date of sale to the date of redemption, together with the amount of any assessment or taxes which the purchaser may have paid thereon after the commencement of the action and which are not included in the judgment, and interest at the rate allowed in section 28-22-104(1), Idaho Code, on such amount; and, if the purchaser be also a creditor having a prior lien to that of the redemptioner, other than the judgment under which such purchase was made, the amount of such lien with interest at the rate allowed in section 28-22-104(1).

The Sheriff, by Certificate of Sale, will transfer all right, title, and interest of the judgment debtor in and to the property at the time the execution or attachment was levied. The Sheriff will give possession but does not guarantee clear title nor continued possessory right to the purchaser.

NOTICE IS HEREBY GIVEN that on February1st, 2024, at 11:00, A.M.

AT: 108 W Spring St., Cascade, ID 83611 at the EOC building across from the Sheriff's Office.

I will sell all the right, title, and interest of the said judgment debtor in and to the said above-described property, at public auction, to the highest bidder for cash in lawful money of the United States to satisfy said execution and all costs.

Given under my hand, January 2nd , 2024.

KEVIN COPPERI, Valley County Sheriff

Nichole Scott
Deputy Sheriff
Published in The Star-News January 11, 18, 25, 2024.

1841860

CITY OF CASCADE
NOTICE OF PUBLIC HEARING

Notice is hereby given that the Cascade City Council will hold a Public Hearing on **Monday, February 5, 2024 at 6:15 p.m.** at Cascade City Hall, 105 South Main Street, Cascade, Idaho. The purpose of receiving testimony from interested persons regarding the application for SUB 24-01, PUD 24-01 and ZON 24-01 submitted by Arrowhead RV Park, LLC. **The proposed Arrowhead Micro Community is a residential community consisting of 117 Residential Tiny Home lots and 17 open space lots. The site is 16.67 acres and is zoned Commercial. Property site address: 955 S Main Street, Cascade, ID 83611 with the legal description: a portion of the SWSW Section 31-T14N-R4E and a portion of SESE Section 36-T14N-R3E.**

The application is on file at Cascade City Hall and is available for review during regular business hours. The public is invited and encouraged to attend and/or make written comments by **Thursday February 1, 2024** . Written comments should be addressed to Brandee Nitzel, P.O. Box 649, Cascade, ID 83611, or email: deputyclerk@cascadeid.us.

This meeting will be conducted in person and as a virtual meeting. The Public will be able to listen and participate, including commenting for the public hearings, via telephone and/or another virtual platform. Instructions for virtual participation for the public will be posted with the Agenda. All information presented in the hearing will also be available upon advance request in a form usable by persons with hearing or visual impairments.

Brandee Nitzel

Published in The Star-News January 11, 18, 2024.

1851180

Notice of Public Hearing
-February 8, 2024–
McCall City Council
City Hall, Legion Room
216 East Park Street

The McCall City Council will hold a public hearing on Thursday, February 8, 2024 at 5:30 PM, or as soon thereafter as the matters may be heard, for the purpose of receiving testimony from interested persons regarding the following applications.

Public testimony is encouraged at the public hearing. To make a comment during the live meeting online or to call-in, or to leave a written comment go to the City's website at https://www.mccall.id.us/packets. Written comments and requests to speak virtually must be made prior to 3:00 pm on February 8, 2024. The public are welcomed to attend the meeting in person. All comments are limited to 3 minutes. Anyone desiring accommodations for disabilities may contact the City Clerk's office, 208-634-4874 or bwagner@mccall.id.us at least 48 hours prior to the public hearing.

Appeal of FPDP-23-01 (ACTION ITEM)
221 Morgan Drive – Dwain and Cindy Sanders
An appeal of the Administrator's decision to deny a Floodplain Development Permit Application. The property is zoned R8 – Medium Density Residential and is more particularly described as:
Lot 19, Block Two of the River's Crossing Subdivision situate in the S ½ of Section 17, T18N, R3E, B.M. City of McCall, Valley County, Idaho.

The complete applications are on file at the Community Development Department, McCall City Hall, 216 East Park Street, McCall, ID, and are available for review by request. The applications are also available for review on the City of McCall website one week prior to the hearing.
Published in The Star-News January 18, 2024.

1869610

NOTICE is hereby given that the Valley County Planning and Zoning Commission will hold public hearings on the following during the meeting on **February 8, 2024**, at 6:00 p.m. at the Valley County Courthouse, 219 North Main Street, Cascade, Idaho. All matters are action items.

You may comment in person during the meeting or by mail or email. Send comments to PO Box 1350, Cascade, ID 83611 or cherrick@co.valley.id.us. Written comments must be received at least seven days prior to the public hearing. Watch the meeting and find additional information on the applications at: www.co.valley.id.us.

C.U.P. 23-53 Troutner Multiple Residences: Jeff and Kathy Troutner are requesting a conditional use permit to allow two residences on one parcel. Each home would have an individual septic system; the existing well would be shared. Access would be from a shared driveway onto Elk Haven Way, a private road. The existing home is addressed at 84 Elk Haven Way. The 19-acre parcel is Elk Haven Subdivision Lot 9 located in the W ½ Section 14, T.17N R.3E, Boise Meridian, Valley County, Idaho.

C.U.P. 23-54 Lake Port Storage Amendment to C.U.P. 18-11: Lake Port Holdings LLC is requesting a conditional use permit to construct two additional buildings adjacent to the eight existing storage buildings. All buildings would continue to be used as dry public storage facilities for boats and trailers. Primary access would be through Mile High Power Sports onto Highway 55 with secondary access from Rogers Lane. The 13.5-acre site, addressed at 13924 B Highway 55, is Hinson Subdivision Lot 3C, located in the NWNW ¼ Sec. 3, T.17N, R.3E, Boise Meridian, Valley County, Idaho.

Tamarack Resort P.U.D. 98-1 Amendment and C.U.P. 23-51 Phase 3.4 – Lower Sugarloaf Custom Chalets – Preliminary Plat: Tamarack Resort Two is requesting an amendment to the approved planned unit development to allow residential lots in an area that was previously platted as open space in Phase 1. This site would include 3 residential lots, recreational easements, and open space. The lots would be accessed by Discovery Drive, private. The site is served by Northlake Recreational Sewer and Water District. The 4.3-acre site is parcel RP0049200000C0 in the NW ¼ Section 5, T.15N, R.3E, Boise Meridian, Valley County, Idaho. Tabled from January 11, 2024.

P.U.D. 23-02 MacGregor Townsite and C.U.P. 23-52 Phase 1 Preliminary Plat: Groves Family LLC is requesting approval of 335 single-family residential lots, community amenities, and open space. The net density is 2.11 units per acre. North Lake Recreational Sewer and Water District would provide water and sewer service. Construction would occur in six phases over a 15-year period. Access would be from Loomis Lane and Old State Road, both public roads. Internal roads would be private. Variances from Valley County Code are requested to reduce right-of-way widths, reduce front and rear setbacks, reduce maximum lot coverage, reduce frontage widths along roads, and allow a hybrid approach to open space requirements. The 159-acre site is parcel RP16N03E270005 located at the intersection of Loomis Lane and Old State Road, in the NE ¼ Section 27, T.16N, R.3E, Boise Meridian, Valley County, Idaho. Tabled from January 11, 2024.

Cynda Herrick, AICP, P&Z Director

Published in The Star-News January 18, 25, 2024.

1871710

Notice of Public Hearing
-February 6, 2024–
McCall Area Planning and Zoning Commission
McCall City Hall – Legion Room & via Microsoft Teams
216 E Park St, McCall, 83638

The McCall Area Planning and Zoning Commission will hold a public hearing on Tuesday, February 6, 2024 at 4:30 PM, or as soon thereafter as the matters may be heard for the purpose of receiving testimony from interested persons regarding the following applications.

Meetings will be available for in person and virtual attendance. Any member of the public can join and listen only to the meeting by calling in as follows: Dial 208-634-8900 when asked for the Conference ID enter: 525 997 816 # . If there are any questions, contact Brian Parker, City Planner (contact provided below).

DR-23-32 & SH-23-12 (ACTION ITEM)
1200 Shady Lane Loop – Dave Lewis – IMPACT AREA
An application for Design Review and Shoreline Review to construct an approximately 1,120 square foot addition to an existing single-family residence including additional living space and garage space. The property is located along the Shoreline Environs Zone of Payette Lake and in the R4 – Low Density Residential Zone. The property is more particularly described as:
Lot 9 of the Shady Beach Community, a portion of Lot 4 in Section 2, T18N, R3E, B.M., Valley County, Idaho.
PUBLIC HEARING

DR-23-33, SH-23-10 (ACTION ITEM)
601 Lick Creek Rd – Luke Vannoy for the Scott-Classen Family
A design review and shoreline application for the construction of an approximately 1,100 square foot addition to an existing single-family residence. The property is located and in the Shoreline Environs Zone of Payette Lake. The property is zoned R4– Low Density Residential, and is more particularly described as:
Lot 2 of Block 6 of the Davis Beach Tracts, situate in Section 4, T18N, R3E, BM, City of McCall, Valley County, Idaho.
PUBLIC HEARING

DR-23-34 & SH-23-11 (ACTION ITEM)
2248 Payette Dr – Luke Vannoy for Berge Family – IMPACT AREA
An application for Design Review and Shoreline Review to renovate an existing ADU, and add an addition to the existing single-family residence. The ADU will total 1,440 square feet and primary residence will total 2,708 square feet. The property is located along the Shoreline Environs Zone of Payette Lake. The property is zoned R4 – Low Density Residential and is more particularly described as:
The Easterly Portion of Lot 55 of the Amended Payette Lake Cottage Sites Subdivision, situated in the Government Lot 3 of Section 25, T19N, R3E, B.M., Valley County, Idaho.
PUBLIC HEARING

CUP-23-12 (ACTION ITEM)
705 Brown Dr – Andy & Dandy Stevens
A Preliminary Development Plan Review for a for a Conditional Use Permit for a Short-Term Rental with an occupancy of greater than 10 people to be operated in a single-family residence. The property is zoned R4 – Low Density Residential, and is more particularly described as:
Lot 10 of Block 1 of the Amended Plat of the Hoff & Brown 1 st Addition, situate in Government Lot 4 in Section 9, T18N, R3E, B.M., City of McCall, Idaho.
PUBLIC HEARING

CUP-23-13 (ACTION ITEM)
2014 University Ln – Justin Manning
An Application for a Conditional Use Permit to utilize an existing Single-Family Home as a Short-Term Rental with an occupancy exceeding 11 people. The Property is Zoned RE – Rural Estate, is located along the Shoreline of Payette Lake, and is more particularly described as:
Lot 1 of Block 3 of the University State Subdivision, situate in a portion of Section 4, T18N, R3E, B.M., City of McCall, Idaho.
PUBLIC HEARING

CUP-23-14 (ACTION ITEM)
1030 Bitterroot Dr – Dave Phillips
A Preliminary Development Plan Review for a for a Conditional Use Permit for a Short-Term Rental with an occupancy of greater than 10 people to be operated in a single-family residence with 7 bedrooms. The property is zoned R4 – Low Density Residential, and is more particularly described as:
Lot 16 of Block 1 Spring Mountain Ranch Subdivision No. 1, situated in the SW ¼ of the NE ¼ of Section 10, T18N, R3E, B.M., City of McCall, Valley County, Idaho.
PUBLIC HEARING

The complete applications are on file at the Community Development Department, McCall City Hall, 216 East Park Street, McCall, ID, and are available for review by request. The applications are also available for review on the City of McCall website one week prior to the hearing. The public is invited and encouraged to attend and/or make written comment. Written comments should be addressed to:

Brian Parker, City Planner
216 E. Park Street
McCall, ID 83638
(208) 634-4256
bparker@mccall.id.us
Published in The Star-News January 18, 2024.

1871880

The following application(s) have been filed to appropriate the public waters of the State of Idaho:
65-24280
BRUNDAGE MOUNTAIN RESORT LLC
PO BOX 1062
MCCALL, ID 83638-1062
Point of Diversion SWNE S29 T18N R03E VALLEY County
Source UNNAMED STREAM Tributary NORTH FORK PAYETTE RIVER
Use: COMMERCIAL
11/16 to 03/14; 0.1 CFS
Total Diversion: 0.1 CFS
Date Filed: 12-12-2023
Place Of Use: COMMERCIAL
T18N R03E S29 SWNE

Permits will be subject to all prior water rights. For additional information concerning the property location, contact the Western Region office at (208)334-2190; or for a full description of the right(s), please see https://idwr.idaho.gov/apps/ExtSearch/WRApplicationResults/. Protests may be submitted based on the criteria of Idaho Code § 42-203A. Any protest against the approval of

PUBLIC NOTICE

this application must be filed with the Director, Dept. of Water Resources, Western Region, 2735 W AIRPORT WAY, BOISE ID 83705-5082 together with a protest fee of $25.00 for each application on or before 2/5/2024. The protestant must also send a copy of the protest to the applicant.
MATHEW WEAVER, Director
Published in The Star-News January 18, 25, 2024.

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ADVERTISEMENT FOR BIDS
CITY OF CASCADE, IDAHO
ID2104-D FEMA GAN 20-SR 161856
General Notice
The City of Cascade (Owner) is requesting Bids for the construction of the following Project: **ID2104-D FEMA GAN 20-SR 161856** Storm Water Hazard Mitigation funded by the Federal Emergency Management Agency, US Department of Homeland Security.

Bids for the construction of the Project will be received by the Cascade City Clerk at **PO Box 649** , **105 S Main St, Cascade, Id 83611** , until **Friday, February 9, 2024,** at **10:00 AM** local time. At that time the Bids received will be publicly opened and read aloud at **105 S Main St, Cascade, Id** .

The Project consist of approximately 1400ft of storm drain improvements including pipe, catch basins, manholes, and sediment boxes. IT also includes 70ft of CIPP lining of a 36" culvert crossing railroad tracks.

Obtaining the Bidding Documents
Information and Bidding Documents for the Project can be found at the following designated website: **www.questcdn.com**

Bidding Documents may be downloaded from the designated website for $22.00 by inputting project **# 8928273** on the website's Project Search page. Please contact QuestCDN.com at 952-233-1632 or info@questcdn.com for assistance in free membership registration, downloading, and working with this digital project information. Prospective Bidders are urged to register with the designated website as a plan holder, even if Bidding Documents are obtained from a plan room or source other than the designated website in either electronic or paper format. The designated website will be updated periodically with addenda, lists of registered plan holders, reports, and other information relevant to submitting a Bid for the Project. All official notifications, addenda, and other Bidding Documents will be offered only through the designated website. Neither Owner nor Engineer will be responsible for Bidding Documents, including addenda, if any, obtained from sources other than the designated website.

Pre-bid Conference
A pre-bid conference for the Project will be held on **January 30, 2024** at **10:00 AM** at **105 S Main St, Cascade, Id.** Attendance at the pre-bid conference is encouraged but not required.

Instructions to Bidders
Contact Trevor Howard (208-559-2663, thoward@saiservices.com if you have any questions.

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

Bids must be accompanied by Bid Security in the form of a bid bond, certified check, cashier's check or cash in the amount of 5% of the amount of the bid proposal. Said bid security shall be forfeited to the City of Cascade, Idaho as liquidated damages should the successful bidder fail to enter into contract in accordance with their proposal as specified in the Instructions to Bidders.

The City of Cascade reserves the right to reject any or all proposals, waive any nonmaterial irregularities in the bids received, and to accept the proposal deemed most advantageous to the best interest of The City of Cascade.

Published in The Star-News January 18, 25, 2024.

1877110

ADVERTISEMENT FOR BIDS
CITY OF CASCADE, IDAHO
A022(953) SH 55, MAIN ST SIDEWALK & BEACON
General Notice
The City of Cascade (Owner) is requesting Bids for the construction of the following Project: **A022(953) SH 55, MAIN ST SIDEWALK & BEACON**

Bids for the construction of the Project will be received by the Cascade City Clerk at **PO Box 649** , **105 S Main St, Cascade, Id 83611** , until **Friday, February 9, 2024,** at **10:00 AM** local time. At that time the Bids received will be publicly opened and read aloud at **105 S Main St, Cascade, Id** .

The project consists of approximately 900 feet of improvements including curb, gutter, & sidewalk,
super pave HMA, pavement markings, and Rectangular Rapid Flashing Beacons (RRFB).

Obtaining the Bidding Documents
Information and Bidding Documents for the Project can be found at the following designated website: **www.questcdn.com**

Bidding Documents may be downloaded from the designated website for $22.00 by inputting project **# 8928270** on the website's Project Search page. Please contact QuestCDN.com at 952-233-1632 or info@questcdn.com for assistance in free membership registration, downloading, and working with this digital project information. Prospective Bidders are urged to register with the designated website as a plan holder, even if Bidding Documents are obtained from a plan room or source other than the designated website in either electronic or paper format. The designated website will be updated periodically with addenda, lists of registered plan holders, reports, and other information relevant to submitting a Bid for the Project. All official notifications, addenda, and other Bidding Documents will be offered only through the designated website. Neither Owner nor Engineer will be responsible for Bidding Documents, including addenda, if any, obtained from sources other than the designated website.

Pre-bid Conference
A pre-bid conference for the Project will be held on **January 30, 2024** at **10:00 AM** at **105 S Main St, Cascade, Id.** Attendance at the pre-bid conference is encouraged but not required.

Instructions to Bidders
Contact Trevor Howard (208-559-2663, thoward@saiservices.com if you have any questions.

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

Bids must be accompanied by Bid Security in the form of a bid bond, certified check, cashier's check or cash in the amount of 5% of the amount of the bid proposal. Said bid security shall be forfeited to the City of Cascade, Idaho as liquidated damages should the successful bidder fail to enter into contract in accordance with their proposal as specified in the Instructions to Bidders.

The City of Cascade reserves the right to reject any or all proposals, waive any nonmaterial irregularities in the bids received, and to accept the proposal deemed most advantageous to the best interest of The City of Cascade.

Published in The Star-News January 18, 25, 2024.

1877050

ADVERTISEMENT FOR BIDS
CITY OF CASCADE, IDAHO
ID2104-AE 2024 PAVEMENT RESERVATION
General Notice
The City of Cascade (Owner) is requesting Bids for the construction of the following Project: **ID2104-AE 2024 PAVEMENT RESERVATION**

Bids for the construction of the Project will be received by the Cascade City Clerk at **PO Box 649** , **105 S Main St, Cascade, Id 83611** , until **Friday, February 9, 2024,** at **10:00 AM** local time. At that time the Bids received will be publicly opened and read aloud at **105 S Main St, Cascade, Id** .

The project consists of approximately 825 SY of HMA patching, 15,000 SY of Chip seal, and 10,400 FT of pavement marking.

Obtaining the Bidding Documents
Information and Bidding Documents for the Project can be found at the following designated website: **www.questcdn.com**

Bidding Documents may be downloaded from the designated website for $22.00 by inputting project **# 8928281** on the website's Project Search page. Please contact QuestCDN.com at 952-233-1632 or info@questcdn.com for assistance in free membership registration, downloading, and working with this digital project information. Prospective Bidders are urged to register with the designated website as a plan holder, even if Bidding Documents are obtained from a plan room or source other than the designated website in either electronic or paper format. The designated website will be updated periodically with addenda, lists of registered plan holders, reports, and other information relevant to submitting a Bid for the Project. All official notifications, addenda, and other Bidding Documents will be offered only through the designated website. Neither Owner nor Engineer will be responsible for Bidding Documents, including addenda, if any, obtained from sources other than the designated website.

Pre-bid Conference
A pre-bid conference for the Project will be held on **January 30, 2024** at **10:00 AM** at **105 S Main St, Cascade, Id.** Attendance at the pre-bid conference is encouraged but not required.

Instructions to Bidders
Contact Trevor Howard (208-559-2663, thoward@saiservices.com if you have any questions.

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

Bids must be accompanied by Bid Security in the form of a bid bond, certified check, cashier's check or cash in the amount of 5% of the amount of the bid proposal. Said bid security shall be forfeited to the City of Cascade, Idaho as liquidated damages should the successful bidder fail to enter into contract in accordance with their proposal as specified in the Instructions to Bidders.

The City of Cascade reserves the right to reject any or all proposals, waive any nonmaterial irregularities in the bids received, and to accept the proposal deemed most advantageous to the best interest of The City of Cascade.

Published in The Star-News January 18, 25, 2024.

1877140

CITY OF MCCALL
Valley County, Idaho

STATE OF IDAHO)
) ss.
County of Valley)

AFFIDAVIT OF MAILING

I, Heather Potts of the City of McCall, Valley County, Idaho, being
(name)

first duly sworn on oath, depose and say that on 1/23/2024, I placed in the United
(date)

States mail, postage prepaid, NOTICE OF HEARING FOR Appeal of FPDP-23-01 221 Morgan Dr.
(land use application)

substantially in the form attached. The notices were addressed to all owners of property shown

in the attached notice.

(signature)

SUBSCRIBED AND SWORN To before me this 23 day of January, 2024

SARA F TOPLIFF NOTARY PUBLIC Comm No. 20213698 STATE OF IDAHO

Notary Public for the State
of Idaho, residing at Valley
My commission expires 8/16/2027

Attachments:

1. Form of Notice
2. List of Property Owners & Addresses

NOTICE OF PUBLIC HEARING
-FEBRUARY 8, 2024–
MCCALL CITY COUNCIL

The McCall City Council will hold a public hearing on Thursday, February 8, 2024 at 5:30 PM, or as soon thereafter as the matters may be heard, VIA Teleconference, for the purpose of receiving testimony from interested persons regarding the following applications.

Public testimony is encouraged at the public hearing. To make a comment during the live meeting **online** or to call-in, or to leave a written comment **go to** the City's website at https://www.mccall.id.us/packets. Written comments and requests to speak virtually must be made **prior to 3:00 pm on February 8, 2024.** The public are welcome to attend the meeting in person. All comments are limited to 3 minutes. Anyone desiring accommodations for disabilities may contact the City Clerk's office, 208-634-4874 or bwagner@mccall.id.us at least 48 hours prior to the public hearing.

Appeal of FPDP-23-01 (ACTION ITEM)
221 Morgan Drive – Dwain and Cindy Sanders
An appeal of the Administrator's decision to deny a Floodplain Development Permit Application. The property is zoned R8 – Medium Density Residential and is more particularly described as:

Lot 19, Block Two of the River's Crossing Subdivision situate in the S ½ of Section 17, T18N, R3E, B.M. City of McCall, Valley County, Idaho.

The complete applications are on file at the Community Development Department, McCall City Hall, 216 East Park Street, McCall, ID, and are available for review by request. The applications are also available for review on the City of McCall website one week prior to the hearing.

City of McCall
COMMUNITY DEVELOPMENT

www.mccall.id.us

216 East Park Street
McCall, Idaho 83638

Phone 208-634-7052
Main 208-634-7142
Fax 208-634-3038

Dear Property Owner:

The enclosed notice is sent to you as a property owner within 300 feet of the location described in the attached Notice of Hearing. If you have any questions regarding this notice, or if you wish to review the application, please contact the McCall City Planner (see contact information below).

The meeting room is accessible to persons with disabilities. If you need assistance, please call the number below.

The public is invited and encouraged to attend and/or make written comment up to one week prior to the hearing date. Written comments should be addressed to:

Brian Parker, City Planner
208-634-4256
bparker@mccall.id.us

216 E. Park Street
McCall, ID 83638

GENERAL GUIDELINES FOR PUBLIC HEARINGS

- All people who testify must state their name, address and whether or not they are for or against the application.
- The public may appoint a spokesperson to represent a group of people.
- Public testimony should be limited to 3-5 minutes.
- The public is expected to treat all people with respect:
    - No booing, hissing or cheering
    - Show respect for all opinions
    - Only those who are recognized by the Commission Chair are allowed to speak

PROCEDURES FOR PUBLIC HEARINGS

1. City Staff will provide comments on the application. The City Council may ask any questions of City Staff.
2. The applicant will present the project. During, or at the conclusion of the presentation, the City Council may ask any questions of the applicant.
3. The Mayor will open the public hearing.
4. Written correspondence will be presented, but need not be read into the record.
5. Public Comment – may be limited to 3-5 minutes per person. This is not a question and answer session with the applicant. The public can state its questions, comments, concerns, etc. and then the applicant will have the opportunity to address those items during rebuttal.
6. Applicant rebuttal – the applicant will be given the opportunity to respond to questions, comments and suggestions made by the public.
7. The Mayor will close the public hearing and no more public testimony will be allowed.
8. The City Council will discuss the evidence obtained during the public hearing and make a decision to either approve, approve with conditions or deny the application.

ParcelId	OwnerNameLabelFormat	OwnerAddr	OwnerCityNm	OwnerState	OwnerZIP
RPM00000177264	Grapevine 7 Inc	10555 Horseshoe Bend Rd	Boise	ID	83714
RPM00000179005	McCall City Of	216 E Park St	McCall	ID	83638
RPM00000179050	Samuel Magee	125 College Dr	Hammond	LA	70401
RPM053800000C0	Rivers Crossing Association Inc	PO Box 2670	McCall	ID	83638
RPM05380020160	Mc Call D LLC	PO Box 2196	Boise	ID	83701
RPM05380020170	Nichole & Brian Bohner	2958 W Champagne Ct	Eagle	ID	83616
RPM05380020180	John & Jill Thompson	227 Morgan Dr	McCall	ID	83638
RPM05380020190	Dwain & Cynthia Sanders	411 Deinard Ln Ste. F Box 123	McCall	ID	83638
RPM05380020200	David & Julia Wicker	6942 Philips Parkway Dr N	Jacksonville	FL	32256
RPM05380020210	Hedding North LLC	8355 W Mirror Pond Dr	Garden City	ID	83714
RPM05380020220	Christine Dixon	147 W Stone Path Ln	Eagle	ID	83616
RPM05380030450	Steve & Angela Heasley	4294 E Homestead Rim Dr	Boise	ID	83716
RPM05380030460	Gery Edson & Trina Kim	5286 N Riffle Way	Garden City	ID	83714
RPM05380030470	James Duzak	PO Box 2565	McCall	ID	83638
RPM05380030480	Whitney Framing LLC	PO Box 189	McCall	ID	83638
RPM05380030490	Quinn & Lemek Rev Trust	5208 N Bluemont Dr	Arlington	VA	22203

CITY OF MCCALL
Valley County, Idaho

STATE OF IDAHO)
) ss.
County of Valley)

AFFIDAVIT OF POSTING

I, Heather Potts (name) of the City of McCall, Valley County, Idaho, being first duly sworn on oath, depose and say that on 1/23/2024 (date), I physically posted the NOTICE OF HEARING FOR Appeal of FPDD-23-01 221 Morgan Dr. (land use application) on the property at the following address/location 221 Morgan Dr., McCall, Idaho.

(signature)

SUBSCRIBED AND SWORN To before me this 23 day of January, 2024.

SARA F TOPLIFF NOTARY PUBLIC Comm No. 20213898 STATE OF IDAHO

Notary Public for the State
of Idaho, residing at Valley
My commission expires 8/16/2027

Attachments:

1. Photo of public hearing posting on property.


PUBLIC HEARING NOTICE
February 8, 2024
Bridge Trail

City of McCall

Floodplain Development Permit Application for the City of McCall

OFFICE USE ONLY
Date Received:
Land Use
App Number:

SECTION I: Applicant and Project Information

GENERAL INFORMATION

1. No work of any kind may begin in a floodplain until a floodplain development permit is issued.
2. The permit may be revoked if any false statements are made in this application.
3. If revoked, all work must cease until a permit is re-issued.
4. The development may not be used or occupied until a Certificate of Compliance is issued.
5. The permit will expire if no work is commenced within 6 months of the date of issue.
6. The permit will not be issued until any other necessary local, state or federal permits have been obtained.

By signing and submitting this application, the Applicant gives consent to the local Floodplain Administrator or his/her representative to make reasonable inspections prior to the issuance of a Certificate of Compliance.

By signing and submitting this application, the Applicant certifies that all statements contained in SECTION I of the application, and in any additional attachments submitted by the Applicant, are true and accurate.

OWNER INFORMATION

Property Owner: Dwain and Cindy Sanders Mailing Address: c/o Steve Millemann, PO Box 1066,

Telephone Number: [redacted]

Email Address: sjm@mpmplaw.com

Signature of Property Owner: [redacted] Date: 1/23/23

APPLICANT INFORMATION

Applicant: __Same_____ Notes:

Telephone Number: _____

Fax Number: _____

Signature of Applicant: _Same

PROJECT INFORMATION

Project Address: ___221 Morgan Drive, MCCall, ID _

Subdivision: Rivers Crossing_____

Lot_19_____

Block:__2_____

Attach Legal Description to application.

PROJECT INFORMATION (continued)

Type of Structure: None proposed

- ☐ Residential (1 to 4 families)
- ☐ Residential (More than 4 families)
- ☐ Non-Residential
  - ○ Elevated
  - ○ Floodproofed (wet/dry)
- ☐ Combined Use (Residential and Non-Residential)
- ☐ Manufactured Home
- ☐ Located within a Manufactured Home Park
- ☐ Located outside a Manufactured Home Park

Type of Structural Activity: None proposed

- ☐ New Structure
- ☐ Addition to Existing Structure*
- ☐ Alteration of Existing Structure*
- ☐ Relocation of Existing Structure **
- ☐ Demolition of Existing Structure
- ☐ Replacement of Existing Structure

*** Substantial Improvement**
If the value of an addition or alteration to a structure equals or exceeds 50% of the value of the structure before the addition or alteration, the entire structure must be treated as new construction.

Substantial Improvement Evaluation:
Cost of Improvement (a): $ -

Market Value of the Building (b) : -

Percent of Value Change (a/b): _____ %
Disclaimer: Substantial Improvement Evaluation must be supported by project cost documentation and approved market evaluation. Attach supporting documentation.

**** Relocation or Replacement**
A relocated structure or a structure being replaced must be treated as new construction.

Other Development Activities (See attached Narrative)

- ☒ Excavation (not related to a structural development)
- ☐ Clearing
- ☒ Placement of Fill Material
- ☒ Grading
- ☐ Mining
- ☐ Drilling
- ☐ Dredging
- ☐ Watercourse alteration
- ☐ Drainage improvement (including culvert work)
- ☐ Individual water or sewer system (not included to a structural development listed above)
- ☐ Roadway or bridge construction
- ☐ Specify other development not listed above:

PROPERTY OWNER SIGNATURE

Applicant: Please note that this application is often subject to engineering and legal review for purpose of addressing compliance and conformance issues. The City of McCall contracts these services to private firms and/or staff with hourly rates approved by City Council. The cost of these professional floodplain permit reviews are passed on to the applicant. These fees are separate and in addition to other land use application and permit fees.

Please initial that you are aware of these additional fees _____

I cert [redacted] *contained in the application is true and accurate.*

Signature of Property Owner: _____ Date: 1/23/23

SECTION II: (To be completed by Floodplain Administrator)

FLOOD INFORMATION

1. The proposed development is located on FIRM map panel:_____ (number and suffix)
2. Effective date on the FIRM: _____
3. The proposed development is located in Zone _____ of the SFHA.
4. Is the proposed development located within the regulatory floodway: ☐ No ☐ Yes *(Attach Completed H&H Analysis for a No-Rise Certificate)*

Structural Development

For structures, the provisions of the flood ordinance specify that the lowest floor, including basement, crawlspace and utilities, be elevated to or above the flood protection elevation.

The Flood Protection Elevation for the proposed development is: _____

Base Flood Elevation: _____

Source of Base Flood Elevation: ☐ FIRM ☐ FIS or ☐ other: _____

The following documents are required:

- ☐ An Elevation Certificate *
- ☐ Site Plan (Showing location of SFHA and development)

The following documents may be required:

- ☐ Floodproofing Certificate * – required if floodproofing a non-residential structure
- ☐ A No-Rise Certificate * – if any of the proposed development is in a "regulatory floodway"
- ☐ An elevation study showing BFEs on developments/ subdivisions exceeding 50 lots or 5 acres in Zone A

** Certificates require completion by a Professional Land Surveyor or Registered Professional Engineer as indicated.*

SECTION III: (To be completed by Floodplain Administrator)

Permit Determination

I have determined that the proposed development:

☐ IS ☐ IS NOT (non-conformance described in separate document)

in conformance with the local Flood Damage Prevention Ordinance.

The Floodplain Development Permit:

☐ IS ☐ IS NOT (denials are described in separate document)

issued subject to any conditions attached to and made part of this permit.

_____ _____

Signature of Floodplain Administrator: Date:

SECTION IV: (To be completed by Floodplain Administrator)

Certificate of Compliance

Certificate of Compliance is issued and the development is found to be in compliance with all applicable ordinances.

_____ _____

Signature of Floodplain Administrator: Date:

This Certificate of Compliance indicates that structures may now be occupied, and non-structural developments may be utilized.

NARRATIVE IN SUPPORT OF

SANDERS FLOODPLAIN DEVELOPMENT APPLICATION

January 23, 2023

1. **Overview:**

The property which is the subject of this Application is Lot 19, Block 2 of the Rivers Crossing Subdivision (the "**Property**"). The Property is 5.29 acres, containing approximately 2.7 acres of delineated wetlands. The vast majority of the Property lies within the area designated by FEMA as the "Special Flood Hazard Area" (a.k.a. the "1% AEP inundation extent"). The project for which this application is filed involves the placement of fill in less than .5 acres of the portion of the Property which is located within the Special Flood Hazard Area.

The placement of the fill is a component of a "CLOMR" (Conditional Letter of Map Revision) Application which is pending with FEMA. These applications allow an owner to obtain a Floodplain map revision by raising the level of property to a level which removes it from the Special Flood Hazard Area. The CLOMR process is expressly recognized by the McCall City Code, at Section 9.8.042, A, 13.

The placement of the fill requires a Floodplain Development Permit under MCC 9.8 .043, because it is within the definition of a "Development Activity" under MCC 9.8.02. No other permits are required under the McCall City Code for the proposed placement of fill.

This Property was the subject of a variance application which was denied by the McCall City Council. That denial has not been appealed and further variances from the Shoreline and River Environs setback will not be sought by the Sanders. The placement of the minimal amount of fill for which the Floodplain Development Permit is sought will not allow the previously designed home to be built. It will modestly expand the buildable area on the Lot, without having any adverse environmental impacts, and allow for a re-designed home to comply with the 50 foot setback requirement of the Shoreline and River Environs Ordinance. It is believed that this is precisely the process which was followed on the lot immediately to the north of the Sanders Property.

2. **The Project**:

The activity for which the Permit is sought will be the placement of imported fill into .48 acres of the Property, of which .15 acres is delineated Shrub/Scrub wetlands. The area in which the fill will be placed is depicted in **Exhibit 1** (the "**Project Area**").

The Property Owners hold a Permit from the Army Corps of Engineers (issued pursuant to Section 404 of the Clean Water Act) to place fill in the .15 acre area, thereby impacting only 2.8% of the Lot and 5.5% of the delineated wetlands. The Permit is a "Nationwide Permit", which permits authorize "only activities with no more than minimal individual and cumulative adverse environmental effects." (See Army Corps of Engineers September 15, 2020 Proposal to Reissue and Modify Nationwide Permits).

The fill will raise the existing elevation of the Project Area to a minimum elevation matching the Base Flood Elevation (BFE) or higher. As the BFE within the Project Area varies, the proposed minimum fill elevation also varies as depicted in **Exhibits 2 and 3**. No fill will be placed within the designated Floodway. No fill will be placed in or will impact any existing watercourse. Erosion control methods will consist of installation of silt fencing around disturbed areas. The small amount of fill contemplated by this Application and the CLOMR Application will result in only a slight rise in the project area (<0.1-ft during the 100-yr flood event). The proposed inundation boundaries were computed in the hydraulic analysis documented in the CLOMR and compared to existing and found no significant difference in floodplain delineations within the project area or any upstream or downstream properties. The Application does not propose the placement or construction of any structures.

3. **The Floodplain Development Application Requirements** (M.C.C. 9.8.043):

The following are the Application requirements of the Ordinance (MCC 9.8 .043(A)(1)):

(a) A plot plan drawn to scale which shall include, but shall not be limited to, the following specific details of the proposed floodplain development:

(1) The nature, location, dimensions, and elevations of the area of development/disturbance; existing and proposed structures, utility systems, grading/pavement areas, fill materials, storage areas, drainage facilities, and other development.

Compliance: See Plot Plan attached hereto as Exhibit 1. There are no existing or proposed structures utility systems, or pavement contemplated by the Application.

(2) The boundary of the special flood hazard area as delineated on the FIRM or other flood map as determined in section 9.8.032 of this chapter, or a statement that the entire lot is within the special flood hazard area.

Compliance: See attached Exhibit 1.

(3) The flood zone(s) designation of the proposed development area as determined on the FIRM or other flood map as determined in section 9.8.032 of this chapter.

Compliance: The current flood zone designation for the Project Area is "1% AEP (100 yr) SFHA"" (see Exhibit 1).

(4) The boundary of the floodway(s) as determined in section 9.8.032 of this chapter,

Compliance: See Exhibit 1. The Project Area is not within or proximate to the Payette River Floodway.

(5) The base flood elevation (BFE) where provided as set forth in section 9.8.032, 9.8.033, or 9.8.053 of this chapter.

Compliance: See Exhibit 1.

(6) The old and new location of any watercourse that will be altered or relocated as a result of proposed development.

Compliance: The proposed activity will not alter, relocate or impact any existing watercourse.

(b) Proposed elevation, and method thereof, of all development within a special flood hazard area including but not limited to:

(1) Elevation in relation to mean sea level of the proposed lowest floor (including basement) of all structures.

Compliance: NA. No structures are proposed as part of this Application.

(2) Elevation in relation to mean sea level to which any non- residential structure in Zone A, AE, AH, AO, or A1-30 will be floodproofed.

Compliance: NA. No structures are proposed as part of this Application.

(3) Elevation in relation to mean sea level to which any proposed utility equipment and machinery will be elevated or floodproofed.

Compliance: NA. No such equipment is proposed as part of this Application.

(c) If floodproofing, a Floodproofing Certificate (FEMA Form 086-0-33) with supporting data, an operational plan, and an inspection and maintenance plan that include, but are not limited to, installation, exercise, and maintenance of floodproofing measures will be required prior to Certificate of Occupancy/Completion.

Compliance: NA

(d) Foundation Plan, drawn to scale, which shall include details of the proposed foundation system to ensure all provisions of this chapter are met.

Compliance: NA

4. **General Standards, to the extent applicable to the proposed activity (MCC 9.8.051(A)):**

15. All subdivision proposals and other development proposals shall have received all necessary permits from those governmental agencies for which approval is required by Federal or State law, including section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 USC 1334.

Compliance: The Applicants hold a Permit from the Army Corps of Engineers for the proposed activity.

5. **Specific Standards (MCC 9.8.052)**: There are no Specific Standards applicable to this Application.

EXHIBIT 1

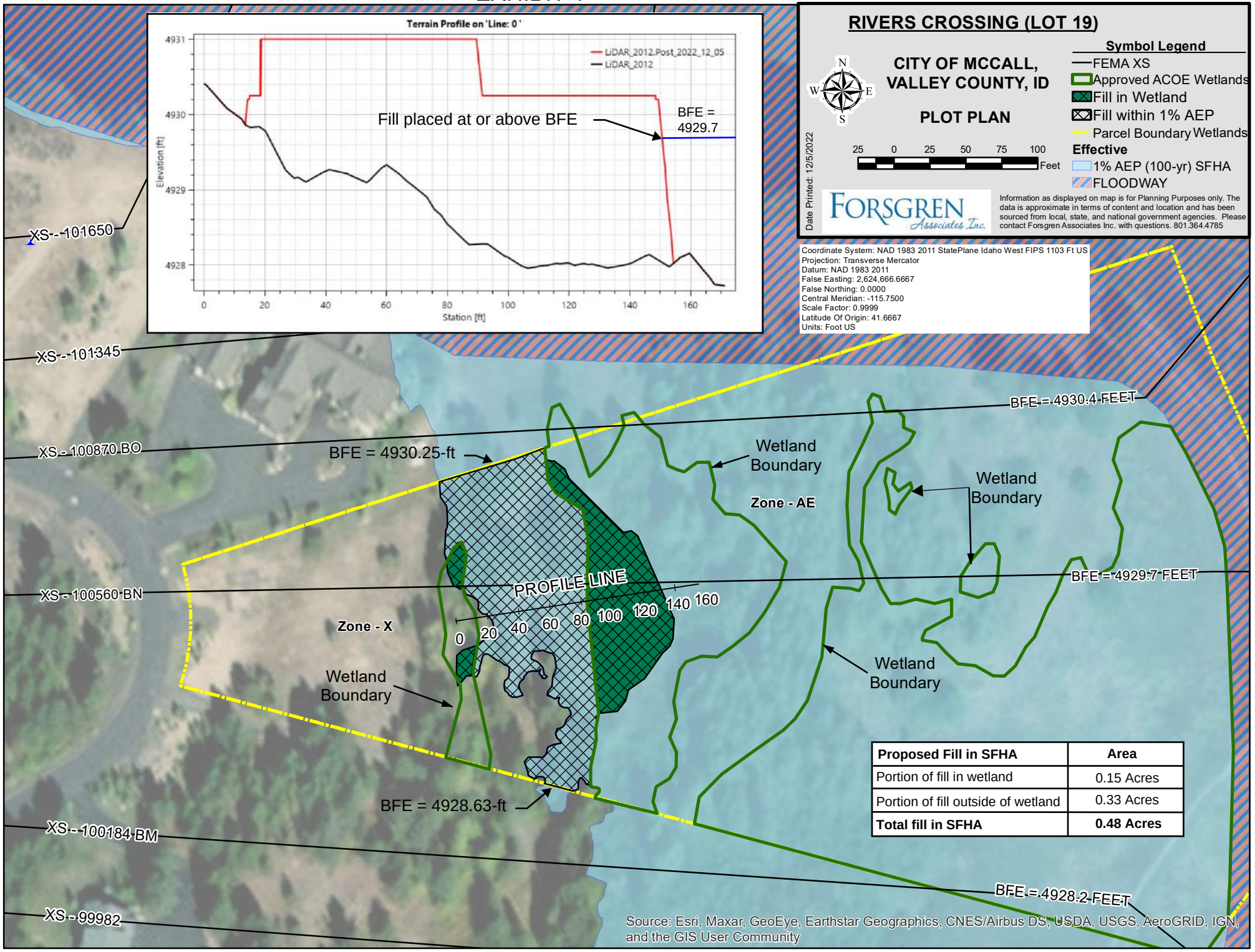
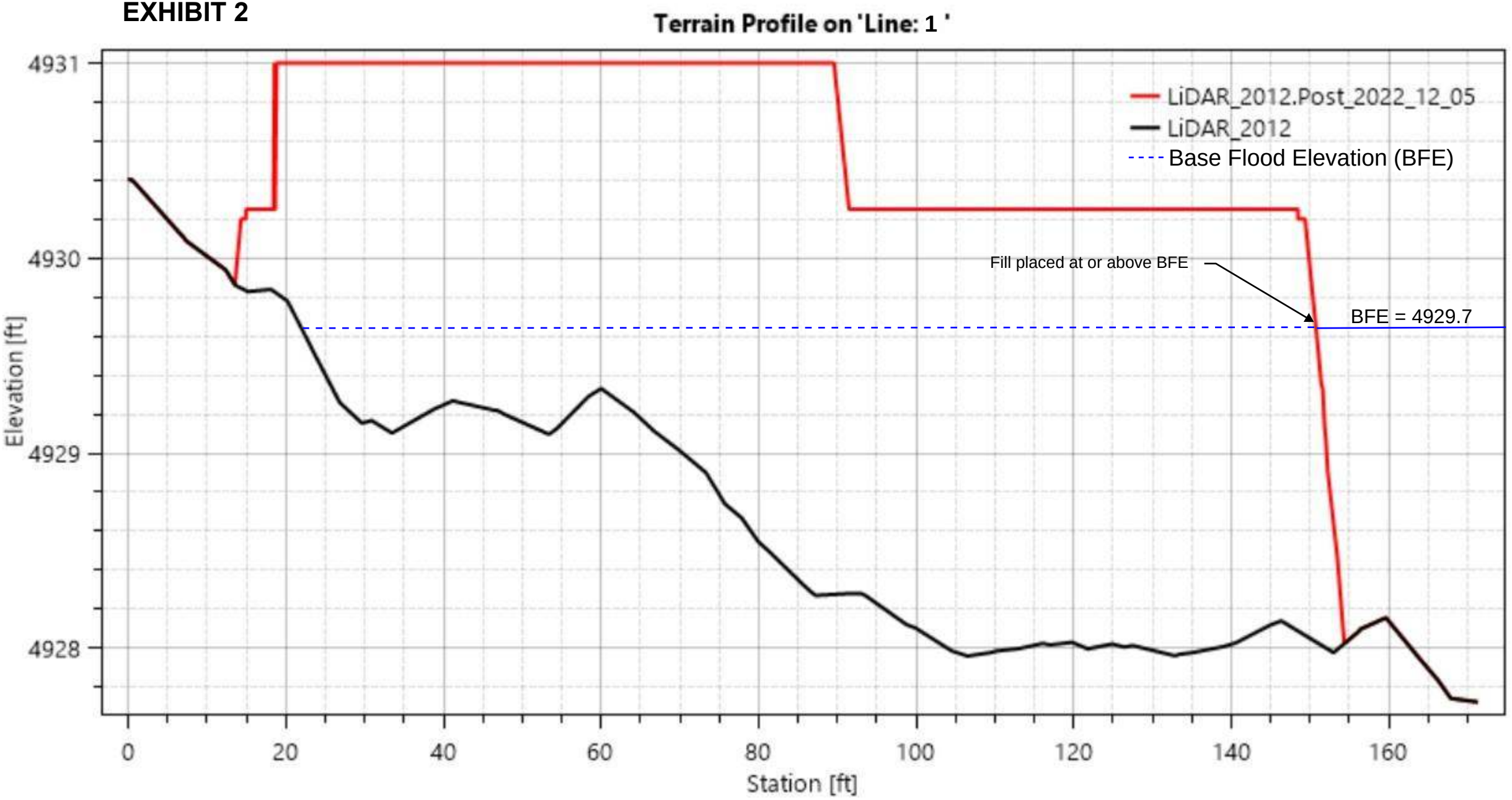

RIVERS CROSSING (LOT 19)
CITY OF MCCALL, VALLEY COUNTY, ID
PLOT PLAN
Date Printed: 12/5/2022
25 0 25 50 75 100
Feet
Symbol Legend
FEMA XS
Approved ACOE Wetlands
Fill in Wetland
Fill within 1% AEP
Parcel Boundary Wetlands
Effective
1% AEP (100-yr) SFHA
FLOODWAY
FORSGREN Associates Inc.
Information as displayed on map is for Planning Purposes only. The data is approximate in terms of content and location and has been sourced from local, state, and national government agencies. Please contact Forsgren Associates Inc. with questions. 801.364.4785
Coordinate System: NAD 1983 2011 StatePlane Idaho West FIPS 1103 Ft US
Projection: Transverse Mercator
Datum: NAD 1983 2011
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US
Terrain Profile on 'Line: 0'
LiDAR_2012.Post_2022_12_05
LiDAR_2012
Fill placed at or above BFE
BFE = 4929.7
Elevation [ft]
Station [ft]
XS - 101650
XS - 101345
XS - 100870 BO
XS - 100560 BN
XS - 100184 BM
XS - 99982
BFE = 4930.4 FEET
BFE = 4930.25-ft
BFE = 4929.7 FEET
BFE = 4928.63-ft
BFE = 4928.2 FEET
Wetland Boundary
Zone - AE
Zone - X
PROFILE LINE
0 20 40 60 80 100 120 140 160
Proposed Fill in SFHA | Area
Portion of fill in wetland | 0.15 Acres
Portion of fill outside of wetland | 0.33 Acres
Total fill in SFHA | 0.48 Acres
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

EXHIBIT 2


Terrain Profile on 'Line: 1 '
LiDAR_2012.Post_2022_12_05
LiDAR_2012
Base Flood Elevation (BFE)
Fill placed at or above BFE
BFE = 4929.7
Elevation [ft]
4931
4930
4929
4928
0
20
40
60
80
100
120
140
160
Station [ft]

City of McCall
COMMUNITY DEVELOPMENT

www.mccall.id.us

216 East Park Street
McCall, Idaho 83638

Phone 208-634-7052
Main 208-634-7142
Fax 208-634-3038

Dwain and Cindy Sanders
C/O Steven J. Millemann
P.O. Box 1066
McCall, ID 83638

Re: FPDP-23-01 – Floodplain Development Permit Application for River's Crossing Lot 19 Block 2 dated January 23, 2023

Dear Mr. and Mrs. Sanders:

Determination of Floodplain Administrator pursuant to McCall City Code: **Application Denied**

Basis for Determination, Findings of Fact and Conclusions of Law:

I. Applicable Code:

1. Floodplain Development Permit Applications are reviewed by the Floodplain Administrator. MCC 9.8.042.
2. The City Planner is designated as the Floodplain Administrator. 9.8.041.
3. According to MCC 9.8.034, no land within the Floodplain can be altered or developed "in any way without full compliance with the terms of this chapter and other applicable regulations."
4. Title 9 Chapter 8 is not intended in any way to "repeal, abrogate, impair, or remove the necessity of compliance with any other laws, ordinances, regulations, easements, covenants, or deed restrictions, etcetera. However, where this chapter and another conflict or overlap, whichever imposes more stringent or greater restrictions shall control." MCC 9.8.035
5. No land may be altered within the floodplain without being in compliance "in full compliance with the terms of this chapter and other applicable regulations." MCC 9.8.038.
6. MCC 3.2.02 provides the following definitions:
   - **a.** Development: Any construction or activity that changes the existing character or use of land upon which such construction or activity occurs.
   - **b.** Excavation: See chapter 70 of the international building code.
     - i. "Excavation is the mechanical removal of earth material." - 2018 IBC 7003
   - **c.** Record Grade: The natural grade existing prior to any site preparation grading, or filling, unless a new record grade is approved at the time of subdivision approval and noted on the filed final plat.
   - **d.** Wetlands: Lands which are dedicated and protected in accordance with Federal laws and are not to be included in the calculation of land to meet the requirements for parks.
7. MCC 3.7.023(B): Permit Criteria: No conditional use or building permit shall be issued, nor is any development, grading, or alteration of any land within this zone permitted, unless the applicant establishes to the satisfaction of the commission and council in the case of a conditional use, or of the administrator in the case of a building permit, that:
   1. The proposed development meets all applicable requirements of this title and title IX of this code.

2. The plans accurately identify the water pool shore contours and high water marks, which, in the case of river environs, shall mean the limits of the area of special flood hazard.
3. A letter is on file from a specialist certified by the United States army corps of engineers wetlands expert that certifies that no wetlands related issues or issues related to fill of navigable waters issues were presented by the proposed development; or that a section 404 permit has been issued or is forthcoming by the corps of engineers, whichever is appropriate, city approval(s) under this title and title IX of this code are contingent upon all applicable section 404 permit requirements being met; if a permit requirement is not met, the city may revoke its approval(s) under this title and title IX of this code.
4. The requirements of the underlying zone are met.
5. The fifty foot (50') building setback line is met per subsection (C)3(c) of this section.
6. Proof of stormwater certification training has been provided by the individual applying for the building permit.

8. According to MCC 3.7.023 (C) Prohibitions: No construction, alteration or activity shall cause harm to:
   a. Water quality.
   b. Fish and aquatic habitats.
   c. Wetlands.
   d. Significant wildlife habitat harboring any threatened or endangered species.
   e. Views of, from, or across a lake or river.
   f. To this end, all applications for building permits within this overlay zone, no matter what the permit may be for, shall be accompanied by a plan for the installation of appropriate natural, storm, and melt water drainage and treatment facilities. Such plans for natural, storm and melt water drainage of the property and on and through the property, shall be consistent with best management practices under state and federal storm and melt water regulatory programs to which the city is subject and consistent with other city programs in these regards to the satisfaction of the city.
   2. Harm Defined: "Harm" for these purposes means:
      a. The creation of conditions which foster runoff of, or other source of fertilizers, toxic substances, or other pollutants or contaminants, into the water;
      b. The excessive clearing of natural vegetation or change of natural landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line;
      c. The removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge;
      d. The filling or dredging of lake bottom or wetlands;
      e. The erection of visual barriers between the lake or river and the roads on the uplands, beyond the extent reasonably necessary for an owner's usage of the land for a permitted use; or
      f. The creation of any other condition which would be inconsistent with best management practices under, or threaten a violation of, state and federal storm and melt water regulatory programs to which the city is subject, or fail otherwise to be consistent with other city programs in these regards, all as established to the satisfaction of the city.
9. Pursuant to MCC 3.8.02(G): Building Permit Required: Until a valid building permit has been issued by the city of McCall, no construction work, including grading, blasting, filling, trenching, tree removal, etc., may be started, except as permitted in section 3.8.03 of this chapter.
10. Pursuant to MCC 3.8.23(B): Structures shall be located in a manner that preserves significant vegetation as set forth in section 3.8.13, as well as water courses, wildlife corridors, wetlands, and significant natural features. Projects should be designed so they complement rather than

dominate the natural landscape. To meet this performance standard all structures should be located:

1. In one of three (3) locations: (a) within tree masses; (b) at the edge of tree or land masses overlooking open space; or (c) in such a way as to preserve the predominate natural features of the site; and
2. At least fifteen feet (15') from any wetland, stream or watercourse.

11. Pursuant to MCC 3.8.23(D) Site grading shall follow the natural terrain of the land and be the minimum necessary for development of the site as determined by the Administrator and Public Works Director.

II. Discussion:

A. The provisions of McCall City Code Title 3 are applicable to Floodplain Development Permits.

A condition for the approval of any Floodplain Development Permit (FDP) is that all proposed Development must meet all applicable Laws, Ordinances, Regulations and Standards. The provisions of Title 9 authorizing FDP's specifically subordinates and subjugates such permits to other applicable standards within the McCall City Code. In that way, a FDP is not a means by which an applicant may avoid the development standards and requirements provided in Title 3 of the McCall City Code.

B. There are three basis found in Title 3 for the denial of the Sanders FDP:

1. No building permit has been issued.

MCC 9.8.042(A)(2) requires that all necessary local, State, and Federal permits have been received. As MCC3.8.02(G) requires a building permit prior to grading or filling. No building permit has been issued for this project and therefore, not all necessary local permits have been received.

2. The proposed Development will cause unpermitted harm.

MCC 3.7.023 prohibits development which will cause harm to:

a. Water quality.
b. Fish and aquatic habitats.
c. Wetlands.
d. Significant wildlife habitat harboring any threatened or endangered species.

The application materials provided to date do not provide adequate evidence that the risk of harm has been minimized.

a. The proposed FDP may result in impermissible runoff

Modifications to the floodplain area for residential development may result in impermissible runoff from the use of fertilizers on lawn areas, excessive silt creation and hazardous materials being introduced to the Payette River during construction. As no building permit application, construction plan, or stormwater management plan has been submitted to date, inadequate evidence exists to determine that the proposed floodplain modification will not result in the creation of impermissible runoff.

b. The Proposed FDP will result in excessive clearing of natural vegetation or change of natural landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line

The proposed floodplain development permit will cause excessive clearing of natural vegetation and likewise represents an excessive change to natural land forms within the area between the river shore and the high water mark. The proposed development is excessive because the property in question includes an area that is large enough to support development without requiring excess and additional modification to the floodplain environment. Thus, the proposed Development on the site is in excess of what is required to develop the site in a way that is otherwise consistent with regulations under McCall City Code.

c. The proposed floodplain development permit will result in the removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge.

The proposed floodplain development permit will result in the removal burial and destruction of features of the high-water mark (defined by MCC 3.7.023(B)(2) to be the area of special flood hazard along river environs), the land below the same and the immediate upland edge. The proposed floodplain development permit clearly proposes destruction of the existing high water mark land contour, filling and burial of areas below the high-water mark, and extension of the upland edge to a location not previously found on site.

d. The Proposed floodplain development permit will result in the filling or dredging of lake bottom or wetlands

The proposed floodplain development permit specifically and unequivocally prescribes and includes the filling of wetlands. Exhibit 1 of the floodplain development permit application clearly identifies Army Corps of Engineers delineated wetlands proposed to be filled.

3. The proposed site grading is in excess of the "minimum necessary for development of the site as determined by the Administrator and Public Works.

As no building permit application or Shoreline and River Environs Design Review application has been submitted to date, any site grading is in excess of the minimum necessary for development of the site.

III. Conclusion.

Based upon the foregoing, it is my determination that the Sanders application for FDP is denied because it proposes site work and grading not permissible under the above referenced sections of McCall City Code.

IV. Availability of Appeal of this Determination

Pursuant to MCC 9.9.07, this determination may be appealed according to the provision of Title III, Chapter 15 of the McCall City Code as follows:

3.15.09: ADMINISTRATIVE APPEALS:

(A) A person aggrieved by a decision by the administrator under this title may appeal such decision to the commission.

(B) Appeals shall be filed within ten (10) days after mailing of notice of decision by the administrator.

(C) Appeals shall be conducted as a public hearing before the commission in the manner set forth in subsections 3.15.04 and 3.15.08 of this chapter. (Ord. 821, 2-23-2006, eff. 3-16-2006; amd. Ord. 998, 1-14-2021)

3.15.08: APPEAL OR REQUEST FOR HEARING BY AGGRIEVED PERSONS:

(A) Right To Appeal: An aggrieved person may appeal the commission decision, or request a hearing on the commission recommendation, by filing a notice of appeal or request for hearing in writing with the city clerk no later than ten (10) days after the issuance of the findings and conclusions of the commission. When such notice of appeal or request is received, proceedings before the council shall be on the record made below. A notice of appeal shall set out with particularity the decision or part thereof from which the appeal is being taken, and whether or not facts found by the commission are disputed by appellant.

(B) Time Limits For Actions: The council shall hold a public hearing on the appeal and the application appealed within forty five (45) days of the request and shall follow the hearing procedures established in section 3.15.04 of this chapter. When there is no required hearing, the council shall put the matter down on its agenda upon a date certain for the consideration of written and oral arguments; notice of such hearing shall be provided to appellant no later than fifteen (15) days before the hearing; should appellant desire to file written arguments, appellant shall do so no later than five (5) days prior to the hearing.

(C) Stay Of Proceedings: An appeal or request for hearing stays all proceedings in furtherance of the action appealed from unless, after the notice of appeal or request for hearing is filed, the council finds that by reason of the facts stated in the application, a stay would cause imminent peril to health, safety or property.

(D) Council Action: After the hearing has been held, the council may:

1. Grant or deny the appeal or the permit; or
2. Delay such decision for no longer than sixty (60) days after the hearing date for further study or hearing; provided, however, that the council must render a decision no later than sixty (60) days from the date of the hearing. (Ord. 821, 2-23-2006, eff. 3-16-2006)

3.15.10: JUDICIAL REVIEW:

A person aggrieved by a decision under this title may, after all remedies have been exhausted under local ordinances, seek judicial review under the procedures provided by sections 67-5215(b) through (g) and section 67-5216, Idaho Code. (Ord. 821, 2-23-2006, eff. 3-16-2006)

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NOTICE OF APPEAL

April 10, 2023

City of McCall
Brian Parker
Planning & Zoning Commission
216 East Park Street
McCall, Idaho 83638

Re: Appeal of FPDP-23-01 Floodplain Development Permit Application for River's Crossing Lot 19 Block 2, Application filed January 23, 2023, Administrative Denial emailed March 31, 2023

Dear Mr. Brian Parker and Planning & Zoning Commission:

On behalf of our clients Dwain and Cindy Sanders, this letter shall serve as an appeal of the Determination of the Floodplain Administrator's denial of the Floodplain Development Permit Application for River's Crossing Lot 19 Block 2, which is referred to herein as "Administrative Denial." Pursuant to McCall City Code, this appeal is filed 10 days after the mailing of the Administrative Denial. The Sanders request that a public hearing be set before the McCall Planning and Zoning Commission for this to be heard on June 6, 2023, or thereafter, based on the availability of the Sanders' counsel. The Sanders respectfully request that the McCall Planning and Zoning Commission enter findings and conclusions granting the Sanders' Floodplain Development Permit Application and which findings and conclusions reverse the Administrative Denial.

I. Identification of the Sanders' Property and background

Dwain and Cindy Sanders own a vacant lot, Lot 19 in Rivers Crossing Subdivision, which is approximately 5.3 acres (referred to as "Property"). The Property abuts the Payette River. At the time the Sanders submitted the Floodplain Development Permit Application, they held a 404 Permit issued by the Army Corps of Engineers under the Clean Water Act to fill .15 acres of wetlands located within the Shoreline and River Environs Zone. That permit will be extended by the Army Corps of Engineers and the record will reflect such as this appeal is decided.

The January 23, 2023, Floodplain Development Permit Application is based on the request to fill a total of .48 acres of a portion of the Property including the .15 acres in wetland in the Special Flood Hazard Area ("SFHA") and .33 acres outside of the wetland. The use of the fill is part of the "CLOMR" (Condition Letter of Map Revision) Application that the Sanders have applied for with FEMA. Simply, by raising the level of the Property, the Property can be removed from the Special Flood Hazard Area. This process is allowed under McCall City Code.

The Sanders applied for a Floodplain Development Permit, which under MCC 9.8.033, "shall be required in conformance with the provisions of this chapter prior to the commence of any development activities within the special flood hazard areas."

The Sanders, or any future owner in interest, would still be required to comply with McCall City building standards, setbacks, and ultimately any placement or construction of a home on this Property. If the Sanders are allowed to proceed with the fill process, any potential home in the future, must comply with a 50 feet Shoreline and River Environs setback and would be located approximately 400 feet from the Little Payette River.

II. Legal Issues on Appeal and response to Administrator's basis for denial

The Sanders respectfully disagree with the City Administrator's denial of the Sanders' Application and the evidence on appeal will show that the site work and grading necessary for the fill process are permitted under McCall City Code.

The Sanders are NOT proposing to install fill within the "floodway", but they are proposing to install fill within a small portion of the special flood hazard area. MCC 3.7.022 provides that all those uses permitted in the underlying zone shall be permitted provided they satisfy the special conditions set forth in this chapter, except that (B) "No building and no land filling shall be permitted within a floodway and no building within an area of special flood hazard as such terms are defined in title IX, chapter 8, "Flood Control Regulations (Overlay)", of this code, unless the applicant complies with the standards set forth in that chapter."

As defined in MCC 9.8.02:

> FLOODWAY: The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.
>
> . . . .
>
> SPECIAL FLOOD HAZARD AREA (SFHA): The land in the floodplain within a community subject to a one percent (1%) or greater chance of flooding in any given year. For purposes of these regulations, the term "special flood hazard area" is synonymous in meaning with the phrase "area of special flood hazard".

The Sanders' Application is subject to the considerations of Title IX, Chapter 8 only, and is not subject to the provisions of the Shoreline & River Environs Ordinance under MCC 3.2.020 as set forth in the record on appeal. However, even if the Shoreline & River Environs Ordinance does apply, the Sanders can meet the standards of development for this fill project.

1. No building permit is required for fill, but in an abundance of caution, the Sanders will simultaneously apply for a building permit.

Currently, the Sanders are not requesting a permit to "build" a home or any kind of structure; instead, they seek approval to fill a portion of the Property with soil to raise the

elevation of such Property. The applicable sections of McCall City Code regarding development in the Shoreline & River Environs Ordinance can be found in MCC 3.2.020.

The Code section 3.2.023 when read in whole requires Shoreline & River Environs design review for single family residences/structures. MCC 3.7.023(A). It requires a CUP in certain circumstances. It requires a building permit to build. It does not clearly require a building permit to place fill. Therefore, the Floodplain Development Application is the appropriate and necessary process for the City's review of this matter.

The purpose of the Shoreline & River Environs Ordinance is "to regulate development along and alterations of the shoreline of Payette Lake and the banks and immediate vicinity of the Payette River." According to MCC 2-1-040 a building permit is required for any "construction, improvement, extension, alteration or demolition of any building, residence or structure." MCC 3.8.02(G) states that "Until a valid building permit has been issued by the City of McCall, no construction work, including grading, blasting, filling, trenching, tree removal, etc. may be started, except as permitted in section 3.8.03 [timber harvest] of this chapter."

It is the Sanders position that both code sections can be given their plain meaning and when read together require a building permit for construction of a building, residence or structure and that when such building permit is required no other ancillary work (e.g. grading, blasting, trenching) can start until such building permit is issued. But a request such as this to fill the property requires no such building permit – because no structure is being built.

This is <u>not</u> an issue which is resolved by MCC 3.1.05(B), which provides that "In case of a conflict between the provisions of various sections *of this title*, the more restrictive provisions shall prevail. (Ord. 821, 2-23-2006, eff. 3-16-2006)". The conflict here is not just within Title III, it also involves Title IX, Chapter 8 (Flood Control Regulations Overlay), which prohibits filling in the "Floodway", but clearly allows for the placement of fill within the SFHA pursuant to a validly issued 404 Permit (see, for example, MCC 9.8.051(A)(15)).

It is, thus, important to recognize that the reliance solely on MCC 3.7.023(C)(1) to resolve this issue would negate: (i) the aforesaid provisions of Title IX, Chapter 8; (ii) the provisions of MCC 3.7.023(B)(3), which allows for the issuance of building permits and conditional use permits impacting wetlands within the Shoreline Environs Zone provided that a 404 Permit has been issued; and (iii) MCC 3.7.022(B), which allows for both buildings and fill within the Shoreline Environs Zone.

The most logical way to reconcile the applicable code sections as they apply to this situation is that a building permit is required for fill if it is part of an application for a structure. The Sanders are required to apply for a Floodplain Development Permit to fill a portion of the Property, which is exactly what they have done. And then, they would be required to apply for a building permit when a home is built.

Whether a building permit is required becomes moot upon the Sanders application for a building permit to install the fill. However, the Sanders do not waive their right to argue that no building is required.

2. There will be no harm, and the Administrator provides no basis for the assertion that unpermitted harm would occur if the permit were granted.

The Sanders do not waive their argument that Shoreline & River Environs Ordinance does not apply, but they address the Administrative Denial on each point. MCC 3.7.023(C)(1) prohibits "harm" to the stated water, etc. However, (C)(1)(f) essentially requires that all "applications for building permits" address the "harm" issues. And, MCC 3.7.023(C)(2), on

which the City heavily relies, provides a definition of "harm", is for purposes of the prior section, rather than a standalone independent ordinance. Supporting this interpretation is MCC 3.7.023 (C)3a(3) (which requires an applicant for a building permit for a single family residence or accessory structure to demonstrate the absence of "harm", "as defined above"; and under (3)(b) such application is evaluated under the standards of (C)(1) and (C)(2).

The Administrative Denial of the Sanders' Application alleges harm would occur if the Sanders were allowed placement of fill; however, that position is not supported by any City report or actual factual findings. The Administrative Denial summarily states that harm will occur to water quality, fish and aquatic habitats, wetlands, and wildlife habitat harboring any threatened or endangered species. To the contrary, the Sanders care deeply about preserving the Little Payette River, water quality, habitats, and wetlands. The project, as proposed, would involve the placement of fill into .48 acres of the Property, which includes only .15 acres of shrub/scrub wetlands.

Importantly, all parties involved desire to prevent harm to the Little Payette River and any building of a structure will require approval, which will allow for all of the stated concerns (water quality, habitat, wetlands) to be addressed. So, the narrow issue for this Application is whether fill will cause harm, if those standards are even applicable.

The evidence on appeal will establish that no such harm will occur if the Floodplain Development Application were granted.

a. Any runoff can be safely mitigated.

The Administrative Denial asserts that impermissible runoff will occur and sites that residential development may result in impermissible runoff from the use of fertilizers on lawn areas, excessive silt created, and hazardous materials introduced into the Payette River during construction. The current Application to fill a small portion of the Property would clearly cause no pollution into the River, excessive silt, or any hazardous materials. Any of those concerns could be mitigated by the City upon application to actually build a structure, landscape, etc.

The Applicant will submit a stormwater management plan showing how runoff will be controlled both during and after placement of the fill to mitigate any concerns about runoff.

b. Natural vegetation can be preserved.

The Sanders received approval from the McCall City Arborist that clearing of "nuisance" shrubby and dead Aspen trees will benefit the remaining vegetation and foliage. However, the Administrative Denial summarily claims that the proposed installation of fill will cause excessive clearing of natural vegetation and represents an excessive change to natural landforms within the area between the river shore and the high water mark. The denial goes on to claim that the proposed development is excessive because there is an area "large enough" to support development without requiring excess and additional modification to the floodplain environment. The Administrative Denial, as written, does not rely on any engineering evidence.

c. The high water mark will be maintained.

The definition of "high water mark" pursuant to MCC 3.7.023(B)(2) as applied to this lot, is arbitrary, because it has no proximity to or impact on the Little Payette River. That code section provides "The plans accurately identify the water pool shore contours and high water marks, which, in the case of river environs, shall mean the limits of the area of special flood hazard."

The very purpose of the Shoreline & River Environs Ordinance is to regulate

development of the banks and immediate vicinity of the Payette River. The banks and immediate vicinity of the Payette River are not being developed with this fill application.

d. The majority of the wetlands will stay intact.

Even if the Shoreline & River Environs Ordinance is applicable, it does not prohibit fill in the wetland pursuant to valid 404 Permit which permitting process establishes a process for the wetland to stay intact. The Army Corps of Engineers has expressly allowed the fill in the .15 acres of wetlands.

3. The proposed site grading will comply with MCC and the minimum necessary for development of the Site.

The Administrative Denial states "as no building permit application or Shoreline and River Environs Design Review application as been submitted to date, any site grading is in excess of the minimum necessary for development of the sites." As stated herein, no building permit or design review is required because the Sanders are not currently proposing to construct any building, residence, or structure.

III. Conclusion

The Sanders ask that this matter be set for a public hearing on June 6, 2023 or thereafter, as their attorneys Steve Millemann and Amy Holm are unavailable on May 2, 2023. The Sanders believe that the record on appeal has and will establish that their Floodplain Development Permit should be granted, and they request that the Administrative Denial be reversed.

Sincerely,

Steven J. Millemann
Amy K. Holm
On Behalf of Dwain and Cindy Sanders

FORSGREN Associates Inc.

DATE: July 17, 2023

TO: James Fronk, James Fronk Consulting, LLC

FROM: Patrick Wickman, Forsgren Associates, Inc.

SUBJECT: River's Crossing Lot 19, Block 2 – Measures to Minimize Environmental Harm

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1.0 PURPOSE

The owner of River's Crossing Lot 19, Block 2 in the City of McCall, Idaho proposes to develop its parcel and construct a new residence (RPM05380020190) (Lot 19). Forsgren Associates, Inc. (Forsgren) was contracted by James Fronk Consulting, LLC (Client) to assess the proposed development's potential to cause harm to the environmental resources identified in the City of McCall's denial of a Floodplain Development Permit Application.

McCall City Code (MCC) Section 3.7.023 prohibits development which will cause harm to:

(a) water quality;
(b) Fish and aquatic habitats;
(c) wetlands; and
(d) significant wildlife habitat harboring any threatened or endangered species.

Also of concern is the potential of site development under the Floodplain Development Permit (FDP) to result in impermissible runoff.

2.0 LOCATION

Lot 19 is located within the River's Crossing Subdivision at 221 Morgan Drive. The lot is bounded by the North Fork (NF) Payette River to its east. It is located on the inside of a meander of the NF Payette River. There are residential developments to the north, south, and west. The McCall RV Resort is located across the river and directly north of the parcel. Riverfront Park is located east of the river. Lot 19 is 5.29 acres. See Figure 1.

3.0 BACKGROUND RESEARCH

Threatened or Endangered Species. An Information for Planning and Consultation (IPaC) Report was requested from the U.S. Fish and Wildlife Service and an email request was made to the Idaho Department of Fish and Game (IDFG) for a review of their Species of Greatest Conservation Need (SGCN) (Attachment 1). These requests were made to determine potential species and habitat concerns for Lot 19.

The IPaC identified three (3) threatened, endangered, or candidate species (Table 1) that may be present in the project area. The IPaC also states that there are no critical habitats within the project area.

Fourteen (14) Birds of Conservation Concern (BCC) were identified in the IPaC (Attachment 3- Table 3). IDFG replied that while the agency does not conduct specific wildlife surveys on private property, they

provided records of nine (9) SGCN within 0.5 miles of Lot 19 (Attachment 3 – Table 4). Species listed within its database in the project vicinity are Tier 2 and Tier 3 SGCN. No Tier 1 species (the highest priority species) were identified.

Wetlands. Wetlands on the 5.29 acre parcel were delineated in 2020. The delineation identified a number of different wetland types totaling 2.7 acres. These included emergent wetlands (i.e., grasses and herbs), scrub-shrub wetlands (i.e., woody vegetation <6' high), and forested wetlands (i.e., trees >6' high). The highest value wetlands are the forested wetlands (aspens), which are located outside the area proposed for development. Proposed impacts are 0.15 acres and would affect a scrub-shrub wetland located away from the river (Attachment 4).

Water Quality. To assess water quality, the Idaho Department of Environmental Quality's (IDEQ) Final 2022 §305(b) Integrated Report for the reach of the North Fork Payette River from Payette Lake to Cascade Reservoir was accessed. This reach is contiguous to the subject property, but still approximately 220 feet from the proposed development.

This section of the river is fully supporting Primary Contact Recreation (i.e., swimming humans) and not supporting Cold Water Aquatic Life or Salmonid Spawning (Attachment 1). This classifies this reach as a Category 5 Water (i.e., a water that does not meet applicable water quality standards for one or more beneficial use). Therefore, under Idaho's Antidegradation Policy, the project must maintain and protect existing uses and water quality conditions.

Fish and Aquatic Habitat. The North Fork Payette River provides habitat for fish and other aquatic wildlife. During consultation with IDFG, the agency identified one Species of Greatest Conservation Need, the Western Pearlshell, an invertebrate (mussel).

As mentioned previously, the river is approximately 220 feet from the limits of proposed development. As such, the only potential for harm to the river would be attributed to runoff associated with site development.

4.0 FIELD RECONNAISSANCE

Field reconnaissance was performed on June 9, 2023, by Erica Koppes and Anna Weins from Forsgren. They were met on site by James Fronk (James Fronk Consulting) and Amy Holm (Owner's legal counsel) who oriented them to the site and areas of proposed development. The proposed development will include a new home and garage with various walkways and driveways built nearest Morgan Drive, primarily in scarcely vegetated uplands.

The entire property was surveyed by foot starting at the site entrance at Morgan Drive. A thorough investigation was performed within the parcel boundary focused on the area of proposed development. The development will impact an upland area immediately east of Morgan Drive and two wetland areas. The wetland types to be impacted are scrub-shrub wetlands and emergent wetlands. Photos and a photo key from the reconnaissance are included in Attachment 2.

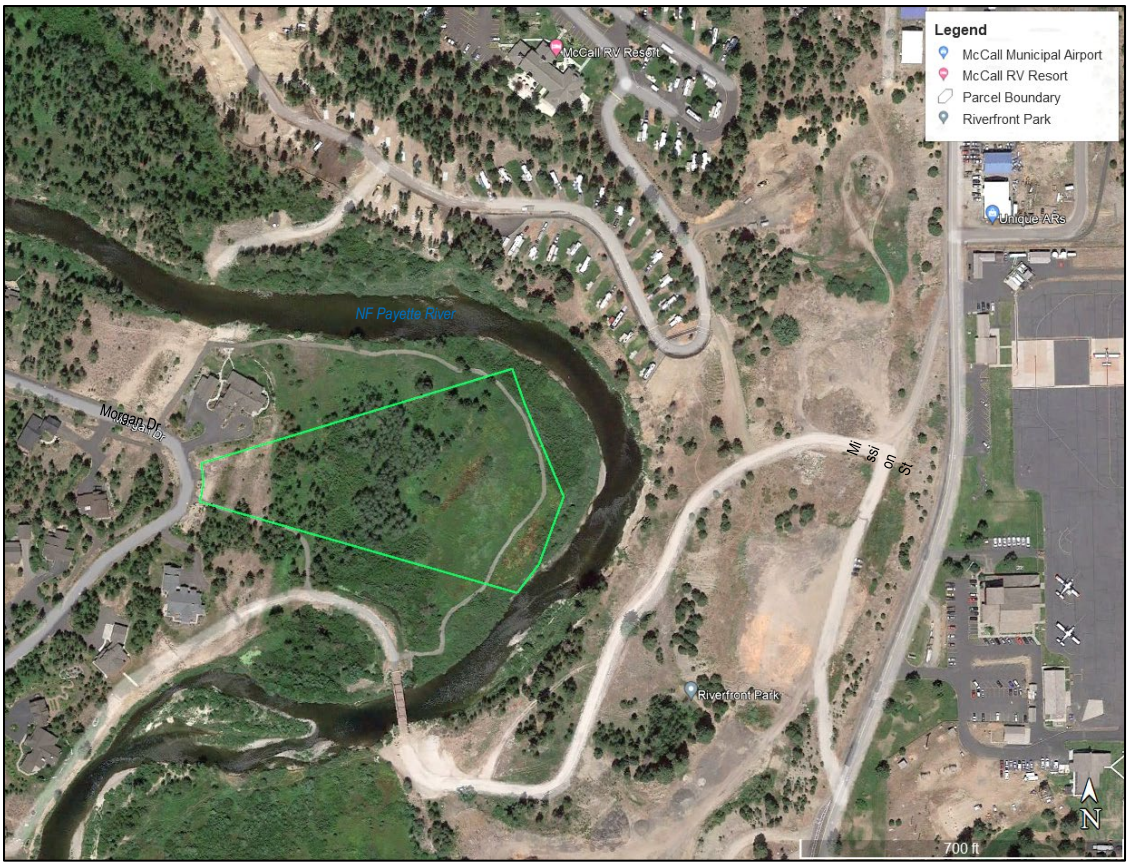


Figure 1. Vicinity map of River's Crossing Subdivision Lot 19, Block 2 (Parcel RPM05380020190)

The portion of the property nearest Morgan Drive is vegetated with upland grasses, scattered shrubs, and various flowering plants. The portion of the property further away from Morgan Drive is where wetlands are concentrated. This area is more densely vegetated with various flowering plants and includes clusters of large aspens and lodgepole pines.

No bird nests were observed at the time of the site visit. Three bird species were identified at the time of the site visit: American Goldfinch, Red Winged Blackbird, and Common Swallow. All birds were observed in the eastern most wetlands adjacent to the river, outside of the influence of the proposed development. None of the species found in Tables 1, 3, or 4 were observed during the field visit. Most wetland areas were saturated with approximately 2-3 inches of standing water. A list of plants observed is included in Attachment 3.

5.0 DISCUSSION

Threatened or Endangered Species. Canada Lynx (*Lynx canadensis*) is a mammal species that has a "threatened" ESA status. The Canada Lynx habitat includes boreal spruce-fir forest ecosystems known as the taiga. This species prefers areas of horizontal forest cover with large populations of snowshoe hares (USFWS ECOS, 2023). Due to the developed nature of the site, proximity to humans, and limited access to prey, this species would not be found on the site and the proposed project have no effect on the species.

North American Wolverine (*Gulo gulo luscus*) is a mammal that has a "proposed threatened" ESA status. The North American Wolverine habitat includes a variety of biomes including Arctic tundra, subarctic-alpine tundra, boreal forest, mixed forest, redwood forest, and coniferous forest. Their habitat is largely attributed to the availability of food. The North American Wolverine primarily scavenges carrion but can supplement their diet with small animals, birds, and fruit or berries (USFWS ECOS, 2023). Due to the developed nature of the site, and proximity to humans, and limited food sources, this species would not be found on the site and the proposed project to have no effect on the species.

Monarch Butterfly (*Danaus plexippus*) is an insect that has a "candidate" ESA status. The adult Monarch Butterfly habitat includes prairies, meadows, and grasslands populated with flowering plants. As Monarch Caterpillars only eat milkweed plants, the Monarch Butterfly relies on milkweed to lay their eggs (USFWS ECOS, 2023). No milkweed was observed on the project site. Many flowering plants within the property will remain undisturbed, providing habitat for adult Monarch Butterflies. Therefore, the proposed project may affect Monarch Butterfly, but is not likely to jeopardize the continued existence of this candidate species.

Table 1. USFWS IPaC Endangered Species Act Listed Species

Scientific Name	Common Name	ESA Listing Status	Category
Lynx canadensis	Canada Lynx	Threatened	Mammal
Gulo gulo luscus	North American Wolverine	Proposed Threatened	Mammal
Danaus plexippus	Monarch Butterfly	Candidate	Insect

SGCN and BCC Species. The SGCN lists two bird species as Tier 2 SGCN status, four bird species as Tier 3, one mammal (bat) species as Tier 2, one mammal (bat) species as Tier 3, and one invertebrate (mussel) species as Tier 2. The IDFG correspondence addressing SGCN species states that while the parcel has an intact native habitat with large deciduous trees; due to the surrounding developments, the agency would not anticipate effects from the proposed development to affect any SGCN species. No SGCN listed species were observed on the project site at the time of the site visit.

Invertebrates will not be harmed as there is no in-channel work being performed. The correspondence does highlight the nesting and perching potential of the deciduous trees located on the property and suggests the following:

> *"According to the Migratory Bird Treaty Act of 1918 (MBTA), if birds are actively using those trees for nesting and chicks are present, the nests may not be disturbed (i.e., the trees may not be removed) until after the chicks have fledged and permanently left the nest. Questions related to the MBTA and its rules and regulations should be directed to the Idaho U.S. Fish and Wildlife Service Office at (208) 378-5243."*

IDFG offered several recommended practices for residential subdivisions and houses located in areas such as this property. These are included in Attachment 1.

The IPaC Report lists fourteen (14) bird species as BCC's, thirteen (13) of which may breed in the vicinity of the project area. Breeding season for these species' ranges from January through August. The IPaC provides a probability of presence summary, determining when BCCs are most likely to be present in the project area. No nests of the species listed were observed at the time of the site visit.

Bald Eagles *(Haliaeetus leucocephalus)* have been observed in the vicinity of the project and are well documented in the McCall area, while Golden Eagles *(Aquila chrysaetos)* have occasionally been recorded in the McCall area (IDFG, 2022). No Bald Eagles or nests were observed at the time of the site visit. Because of the level of human activity, bald eagles foraging in the area are likely highly acclimated to human activity; therefore, no impacts will occur.

Wetlands. The proposed development proposes to impact 0.15 acres of the 2.7 acres of wetlands that are identified on the 5.29 acre site. Wetland impacts have been both avoided by placing the majority of the new residence in the upland area near Morgan Drive and minimized by impacting the lesser value scrub-shrub wetlands and preserving the older forested wetlands.

Impacts to wetlands will occur under a permit issued by the US Army Corps of Engineering and coverage under the IDEQ's 401 Water Quality Certification blanket coverage. Permit Drawings that show wetland types and impacts are in Attachment 4.

Stormwater and Site Control Best Management Practices (described further below) would surround the area of disturbance to protect adjacent wetlands.

Water Quality. Protection of water quality is addressed in the conditions of the USACE permit required to fill wetlands, the IDEQ's Idaho Pollution Discharge Elimination System (IPDES) Construction General Permit (CGP), and the City of McCall's Drainage Management Guidelines[1]

The USACE permit requires appropriate soil erosion and sediment control measures to be used and maintained in effective operating condition during construction. The IPDES CGP also requires the stabilization of disturbed areas and the use of Best Management Practices (BMP) to protect runoff from the project site to river and adjacent wetland areas. The Code also requires similar measures.

An erosion control plan was developed for the project in 2020 and included in Attachment 4. The proposed includes the follow proposed measure:

1. Stabilized Construction Entrance /Exit
2. Onsite Proposed Stormwater Management Basins (6 total)
3. Silt fencing and fiber wattles located around the perimeter of the site

By implementing these proposed BMPs, the proposed project would presumably be able to adhere to Idaho's Antidegradation Policy and maintain (and not diminish) the reach's status of fully supporting Primary Contact Recreation and well as not create additional harm to its status of not supporting Cold Water Aquatic Life or Salmonid Spawning.

These proposed BMPs will manage runoff and prevent impermissible runoff from occurring.

Fish and Aquatic Habitat. As discussed previously, the proposed development is sited as far west on the parcel as possible with a minimal distance from the site to the river (approximately 220 feet). Therefore, harm to fish and aquatic habitat in the river are first avoided by site layout.

[1] Drainage Management Guidelines (Toothman-Orton Engineers, 1997): https://evogov.s3.amazonaws.com/141/media/115536.pdf

Additionally, the stormwater plan the contractor would implement would manage runoff during construction and stabilize the site post-construction. Stormwater management basins would detain stormwater on site so post-construction conditions match pre-construction conditions. Contractors would access the site through a stabilized entrance located at Morgan Drive. By following these measures, there would be minimal to no opportunity to harm fish or aquatic habitat.

6.0 CONCLUSIONS

Threatened or Endangered Species. No Federally listed species were observed during a field visit to the project area. No suitable habitat exists to support Canada Lynx, North American Wolverine, or Monarch Butterfly caterpillars within the project area. The proposed project would have no effect on the Canada Lynx and North American Wolverine and may affect the Monarch Butterfly but is not likely to jeopardize the continued existence of this candidate species. In other words, Block 19 does not possess significant wildlife habitat harboring any threatened or endangered species (MCC 3.7.023(C)(d)). The rationale for these decisions is provided in Table 2.

The proposed development would not be anticipated to have an effect on either native plant, terrestrial wildlife populations, or SGCN species due to the surrounding residential development.

Table 2. Threatened or Endangered Species Effects Determination

Common Name	ESA Listing Status	Effect Determination	Rationale
Canada Lynx	Threatened	No Effect	No habitat for this species in the project area.
North American Wolverine	Proposed Threatened	No Effect	No habitat for this species in the project area.
Monarch Butterfly	Candidate	May affect; not likely to jeopardize the continued existence of species.	No milkweed was observed on the project site. Any effect to flowering plants would be negligible by proposed development. Pollinator habitat (although no milkweed was observed) may be in the project area where mature riparian vegetation exists. Proposed BMPs are included.

Wetlands. The proposed development has been designed and would be implemented to (1) avoid wetlands, (2) minimize impacts to higher value wetlands and (3) only impact wetlands permitted by the agency with jurisdiction, the USACE. Best Management Practices would be implemented during construction.

It is believed that the proposed development has minimized the risk of harm to wetlands to the best practicable extent.

Water Quality. By adhering to erosion and sediment control measures proposed to be implemented under the USACE permit required to fill wetlands, the IDEQ's Idaho Pollution Discharge Elimination System (IPDES) Construction General Permit (CGP), and the City of McCall's Drainage Management Guidelines, the risk of harm to water quality in the river and surrounding wetlands has been minimized to the best extent practicable.

Fish and Aquatic Habitat. Fish and aquatic habitat in the river are best protected from harm by site design and by the project adhering to its proposed stormwater runoff controls. By following these methods, it is understood the proposed development would minimize harm to these resources.

Impermissible Runoff. The construction and post-construction stormwater management plan will, at a minimum, follow the City of McCall Drainage Management Guidelines and manage/prevent runoff from the proposed development.

Best Management Practices (BMPs)

The project will remove several small to medium sized lodge pole pine trees and aspens around the proposed building pad. All planned work shall adhere to the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) requirements. The nesting season for this area is from May 15th to August 15th.

The Contractor shall implement the following BMP's to support pollinators and pollinator habitat:

1. Protect Existing Habitat: Protect existing stands of native vegetation. Ground disturbing activities will be limited only to those areas deemed necessary for the construction of the project. Disturbing existing areas of native vegetation purely for the convenience of the contractor is prohibited.
2. Remove and control noxious weeds in the project limits.
3. Herbicide Use: Reduce the risk of herbicide exposure to pollinators by: (1) Eliminating or reducing herbicide exposure to pollinators by first utilizing non-chemical (manual) methods to eliminate noxious and undesirable weeds. (2) If herbicide use is necessary, spot treat specific weeds with selective herbicides that do not leave residuals in the soil. (3) Treat weeds before they flower, to avoid spraying when pollinators are present. (4) Avoid spray application if winds are above 10 mph.
4. Re-vegetation: Revegetate disturbed areas with a native seed mix, including milkweed species.

The Contractor shall implement the following BMP's to protect wetlands, fish and aquatic habitat; and water quality:

1. Prepare and implement a Storm Water Pollution Prevention Plan
2. Adhere to the City of McCall's Drainage Management Guidelines (1997)
3. Proposed Best Management Practices:
    a. Stabilized Construction Entrance /Exit
    b. Onsite Proposed Stormwater Management Basins (6 total)
    c. Silt fencing and fiber wattles located around the perimeter of the site

7.0 REFERENCES

Idaho Fish and Game (IDFG), Brandon Flack (personal communication, June 08, 2023).

Idaho Fish and Game (IDFG): View & Export. (2022, October 17). https://idfg.idaho.gov/species/observations/list?species_id=18587&county_id=224 (accessed June 12, 2023).

McCall Code of McCall, Idaho. 1994. American Legal Publishing.

U.S. Fish and Wildlife Service (USFWS): Environmental Conservation Online System (ECOS). Species Profile. https://ecos.fws.gov/ecp/species (accessed June 12, 2023).

U.S. Fish & Wildlife Service (USFWS): Information for Planning and Consultation (IPaC) https://ipac.ecosphere.fws.gov (accessed June 08, 2023, printed June 13, 2023).

ATTACHMENT 1 – AGENCY COORDINATION

Erica Koppes

From: Flack,Brandon <brandon.flack@idfg.idaho.gov>
Sent: Thursday, June 8, 2023 2:43 PM
To: Erica Koppes
Cc: Patrick Wickman
Subject: RE: SGCN Species McCall Lot 19

EXTERNAL MESSAGE

Hi Erica,

The Idaho Department of Fish and Game (IDFG) has received your request for a list of SGCN species on and around parcel RPM05380020190 (5.29 acres) located on Morgan Drive in McCall, ID for planning and zoning purposes. This email serves as an IDFG letter addressing fish, wildlife, and plant resources as a component of the natural features of the property, including any sensitive plant and wildlife species recorded in the project vicinity.

IDFG has not conducted specific wildlife surveys on the property. The Idaho Fish and Wildlife Information System (IFWIS) database contains no records of special-status plant or animal species on the project property. The IFWIS database contains records of 9 Species of Greatest Conservation Need (SGCN) within 0.5 miles of the property boundary.

Common Name	Scientific Name	Category	SGCN Tier
Clark's Nutcracker	*Nucifraga columbiana*	Bird	3
Common Nighthawk	*Chordeiles minor*	Bird	3
Golden Eagle	*Aquila chrysaetos*	Bird	2
Little Brown Myotis	*Myotis lucifugus*	Mammal (bat)	3
Olive-sided Flycatcher	*Contopus cooperi*	Bird	3
Sandhill Crane	*Grus canadensis*	Bird	3
Silver-haired Bat	*Lasionycteris noctivagans*	Mammal (bat)	2
Western Grebe	*Aechmophorus occidentalis*	Bird	2
Western Pearlshell	*Margaritifera falcata*	Invertebrate (mussel)	2

Aerial imagery indicates the parcel has a disturbed area near Morgan Dr. and that it likely has intact native habitat with large deciduous trees from there down to the river. The parcel is surrounded by other developed properties. Considering the parcel is surrounded by other development, IDFG would not anticipate effects from a residential home on native plant or terrestrial wildlife populations, including the SGCN species listed above. However, the presence of large deciduous trees can provide nesting and perching locations for many bird species. According to the Migratory Bird Treaty Act of 1918 (MBTA), if birds are actively using those trees for nesting and chicks are present, the nests may not be disturbed (i.e., the trees may not be removed) until after the chicks have fledged and permanently left the nest. Questions related to the MBTA and its rules and regulations should be directed to the Idaho U.S. Fish and Wildlife Service Office at (208) 378-5243.

In addition, IDFG recommends the following practices for residential subdivisions and houses that are located in areas such as this:

- Residents should control pets, including cats, at all times (fenced yard, keep indoors, kenneled, leashed, etc.). Pets, at-large, dramatically increase a residential subdivision's negative effects on wildlife.
- Prohibit the feeding of wildlife and require that potential wildlife attractants (pet food, garbage, gardens, etc.) be maintained in a way to reduce attraction of wildlife species (skunks, foxes,

raccoons, magpies, etc.). Eliminating or minimizing the potential for wildlife depredations is the responsibility of the property owner.
- Native vegetation should be retained to the extent possible during project implementation to support birds, small mammals, and pollinator species.
- Yew species should not be used as landscaping plants as they are highly toxic to wildlife, pets, and humans.
- Retain buffers of riparian vegetation that surround any wetland resources on the property.
- If ponds are developed, legal water rights are required for the appropriate beneficial use (storage, irrigation, recreation, etc.). If the ponds will be used for fishing, a private pond permit from IDFG is required to stock the ponds with fish, and a live fish transport permit may also be required.
- All fencing within and around the property should be wildlife friendly. IDFG can provide additional details upon request.

Thank you for your interest in the state's fish, wildlife, and plant resources. Please feel free to contact me with additional information needs or other questions.

Regards,

Brandon Flack
Regional Technical Assistance Manager
Idaho Dept. of Fish and Game
Southwest Region
15950 N. Gate Blvd.
Nampa, ID 83687
Ph: (208) 854-8947

From: Erica Koppes <ekoppes@forsgren.com>
Sent: Wednesday, June 7, 2023 4:46 PM
To: Flack,Brandon <brandon.flack@idfg.idaho.gov>
Cc: Patrick Wickman <pwickman@forsgren.com>
Subject: SGCN Species McCall Lot 19

Brandon,
I am requesting a list of SGCN species for planning and zoning purposes for the Parcel RPM05380020190 (5.29 acres) and surrounding area, located in the City of McCall, Idaho. I have attached a .kmz with the project location.

Thank you,
Erica Koppes
Water Resource Scientist
FORSGREN Associates Inc.
1109 West Myrtle Street, Suite 300

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Idaho Fish And Wildlife Office
1387 South Vinnell Way, Suite 368
Boise, ID 83709-1657
Phone: (208) 378-5243 Fax: (208) 378-5262

In Reply Refer To:
Project Code: 2023-0093162
Project Name: Rivers Crossing - Lot 19

June 13, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

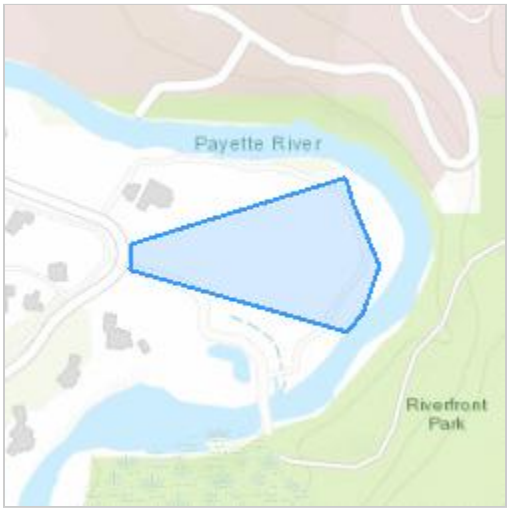
Idaho Fish And Wildlife Office
1387 South Vinnell Way, Suite 368
Boise, ID 83709-1657
(208) 378-5243

PROJECT SUMMARY

Project Code: 2023-0093162
Project Name: Rivers Crossing - Lot 19
Project Type: Residential Construction
Project Description: Forsgren Associates has been tasked with surveying a 5.3-acre property in McCall, Idaho to determine species present within and around the proposed site and the effects the proposed project has on any listed species. The Client intends to build a residential building on the property.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.892778050000004,-116.10977725993015,14z



Counties: Valley County, Idaho

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Canada Lynx *Lynx canadensis* Population: Wherever Found in Contiguous U.S. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3652	Threatened
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
California Gull *Larus californicus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31

NAME	BREEDING SEASON
Cassin's Finch *Carpodacus cassinii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Evening Grosbeak *Coccothraustes vespertinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
Franklin's Gull *Leucophaeus pipixcan* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Lewis's Woodpecker *Melanerpes lewis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9408	Breeds Apr 20 to Sep 30
Olive-sided Flycatcher *Contopus cooperi* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Rufous Hummingbird *selasphorus rufus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15
Western Grebe *aechmophorus occidentalis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

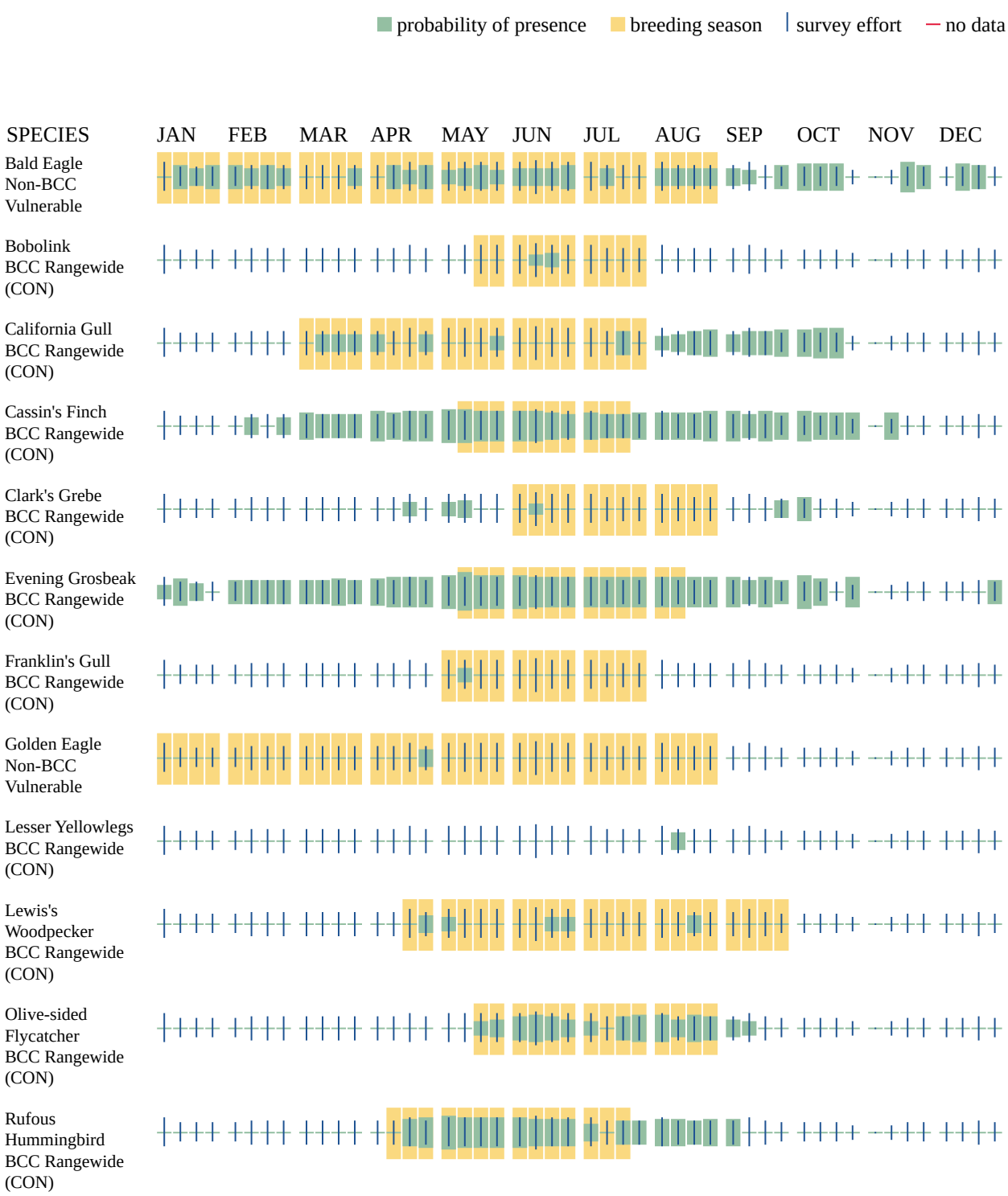
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

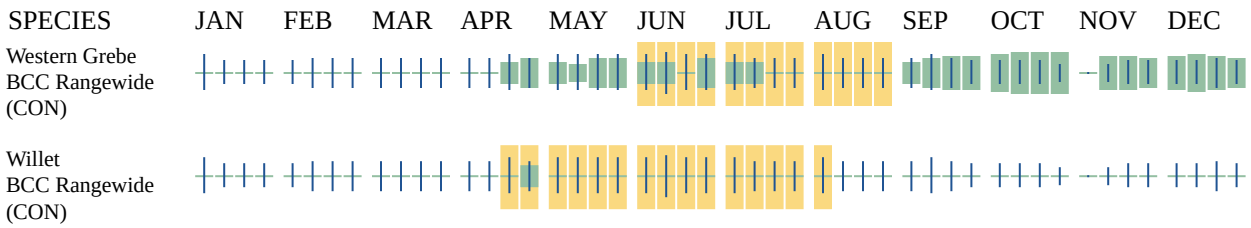
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

MIGRATORY BIRDS FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER FORESTED/SHRUB WETLAND

- PSSA

FRESHWATER EMERGENT WETLAND

- PEM1A

IPAC USER CONTACT INFORMATION

Agency:	Forsgren-Associates-Inc
Name:	Erica Koppes
Address:	1109 W. Myrtle St.
Address Line 2:	Suite 300
City:	Boise
State:	ID
Zip:	93702
Email	ekoppes@forsgren.com
Phone:	2083423144

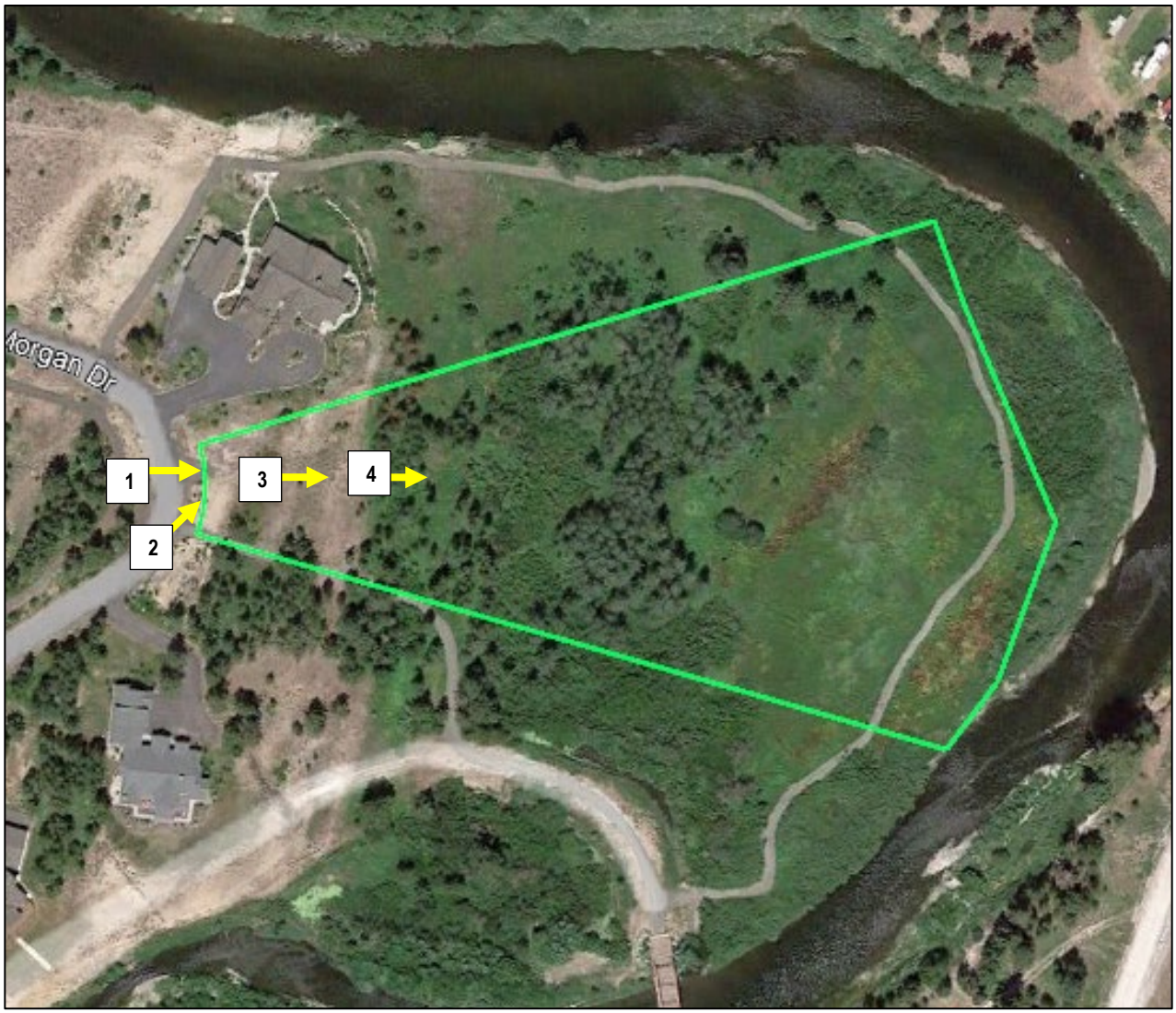
ATTACHMENT 2 – SITE PHOTOS

Photo 1. Lot entrance at Morgan Drive looking east. Upland area in foreground and trees in background to be developed.

Photo 2. Lot entrance at Morgan Drive looking northeast. Neighboring house to north.

Photo 3. Aspens and pine trees at proposed building site looking east.

Photo 4. Proposed wetland area to be disturbed by proposed building looking east.



BLOCK 19 LOT 2 – PHOTO KEY

ATTACHMENT 3 – LIST OF PLANTS OBSERVED ON SITE – JUNE 9, 2023

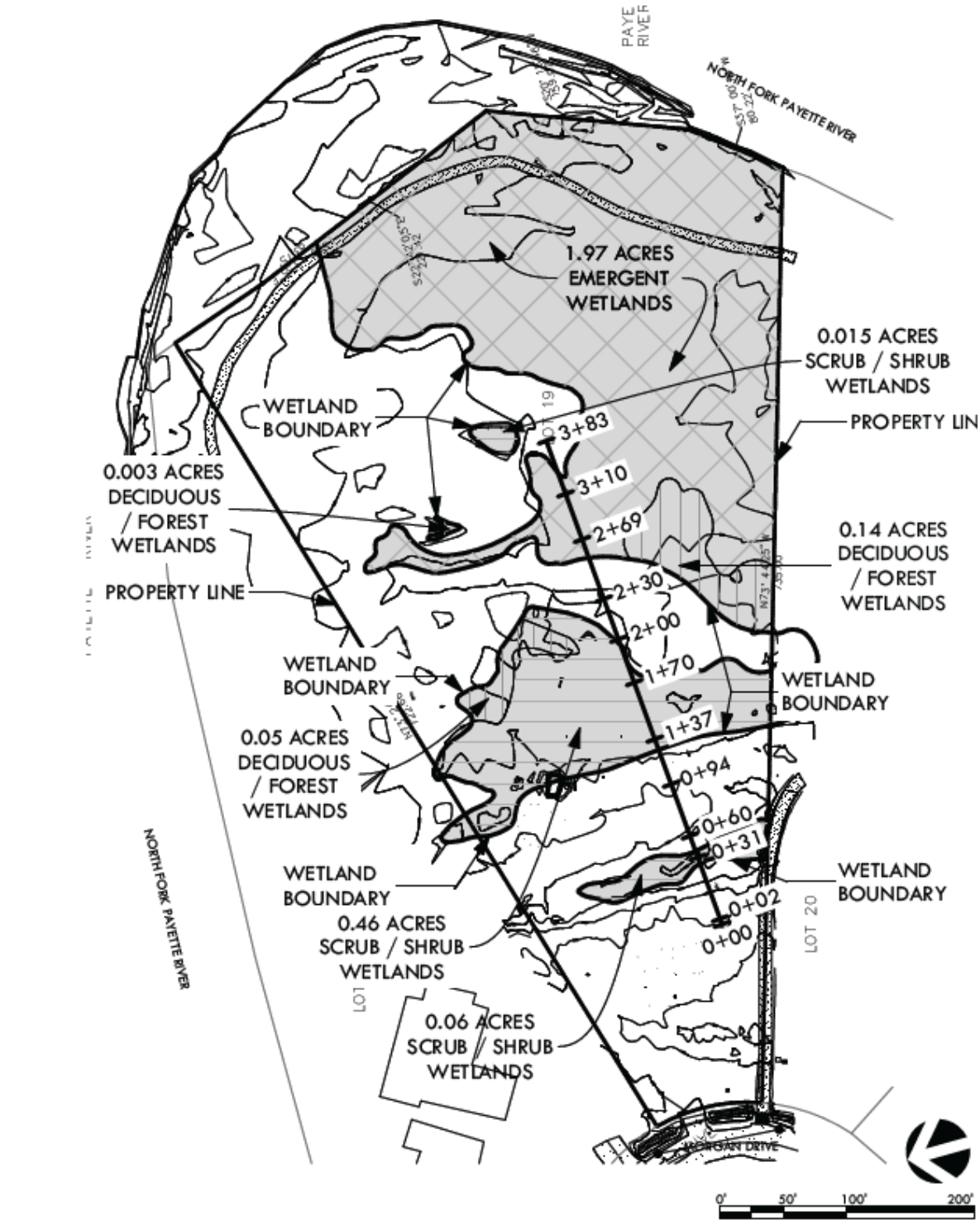
Table 3. USFWS IPaC Birds of Conservation Concern Listed Species

Scientific Name	Common Name
Haliaeetus leucocephalus	Bald Eagle
Dolichonyx oryzivorus	Bobolink
Larus californicus	California Gull
Carpodacus cassinii	Cassin's Finch
Aechmophorus clarkii	Clark's Grebe
Coccothraustes vespertinus	Evening Grosbeak
Leucophaeus pipixcan	Franklin's Gull
Aquila chrysaetos	Golden Eagle
Tringa flavipes	Lesser Yellowlegs
Melanerpes lewis	Lewis's Woodpecker
Contopus cooperi	Olive-sided Flycatcher
selasphorus rufus	Rufous Hummingbird
aechmophorus occidentalis	Western Grebe
Tringa semipalmata	Willet

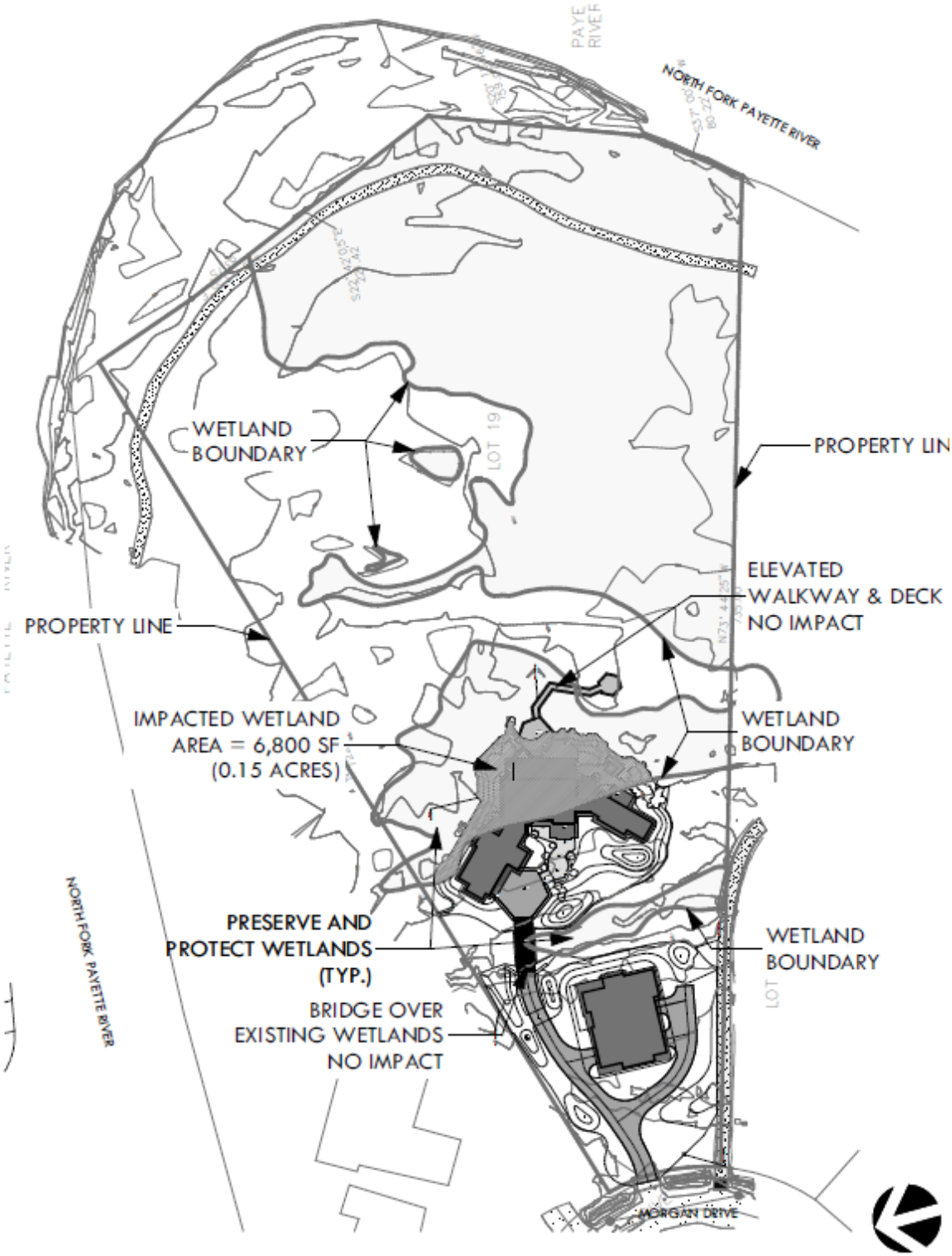
Table 4. IDFG IGWIS Species of Greatest Conservation Need

Scientific Name	Common Name	Category	SGCN Tier
Nucifraga columbiana	Clark's Nutcracker	Bird	3
Chordeiles minor	Common Nighthawk	Bird	3
Aquila chrysaetos	Golden Eagle	Bird	2
Myotis lucifugus	Little Brown Myotis	Mammal (bat)	3
Contopus cooperi	Olive-sided Flycatcher	Bird	3
Grus canadensis	Sandhill Crane	Bird	3
Lasionycteris noctivagans	Silver-haired Bat	Mammal (bat)	2
Aechmophorus occidentalis	Western Grebe	Bird	2
Margaritifera falcata	Western Pearlshell	Invertebrate (mussel)	2

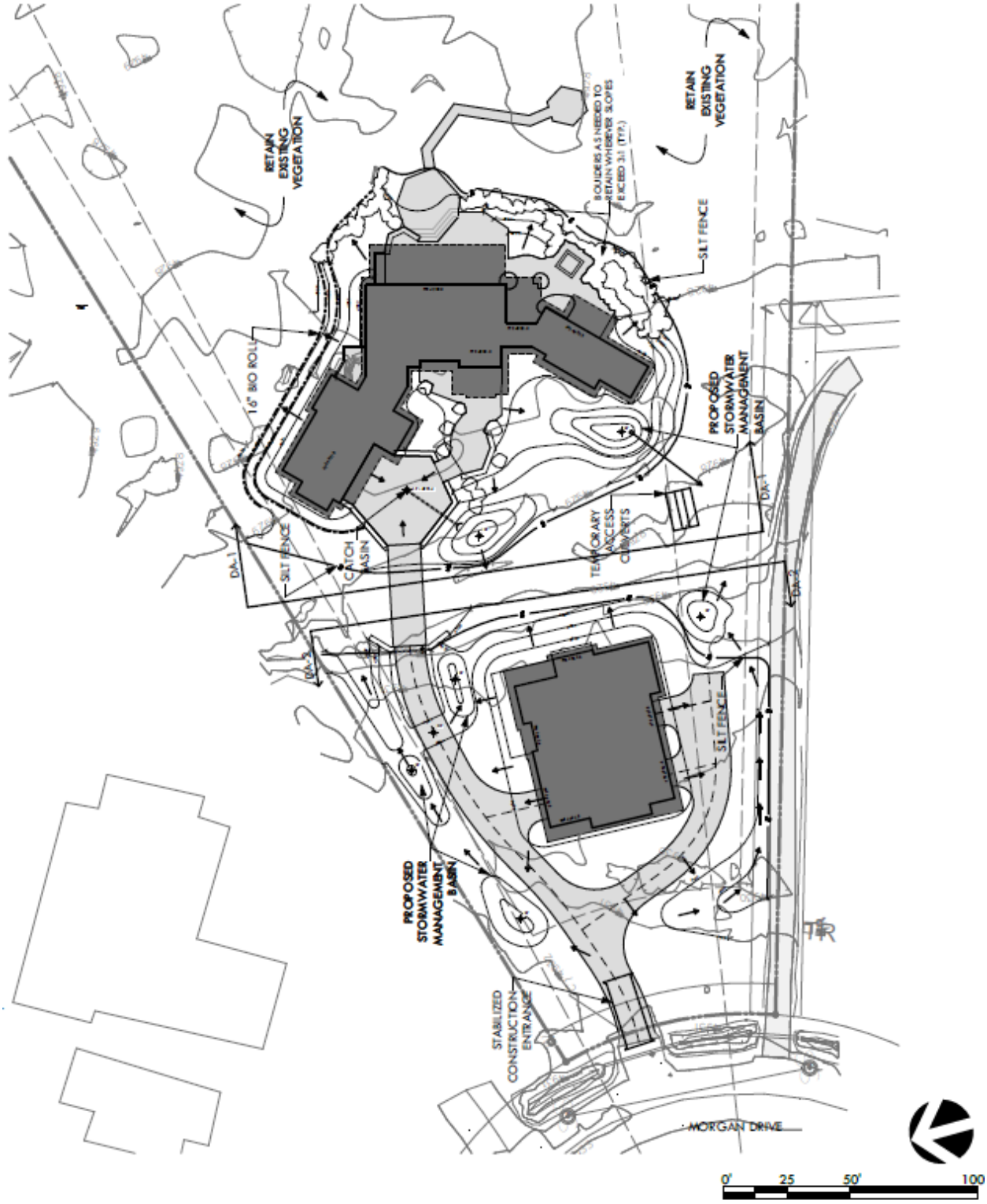
ATTACHMENT 3 – WETLANDS PERMIT DRAWINGS (AUGUST 2020)



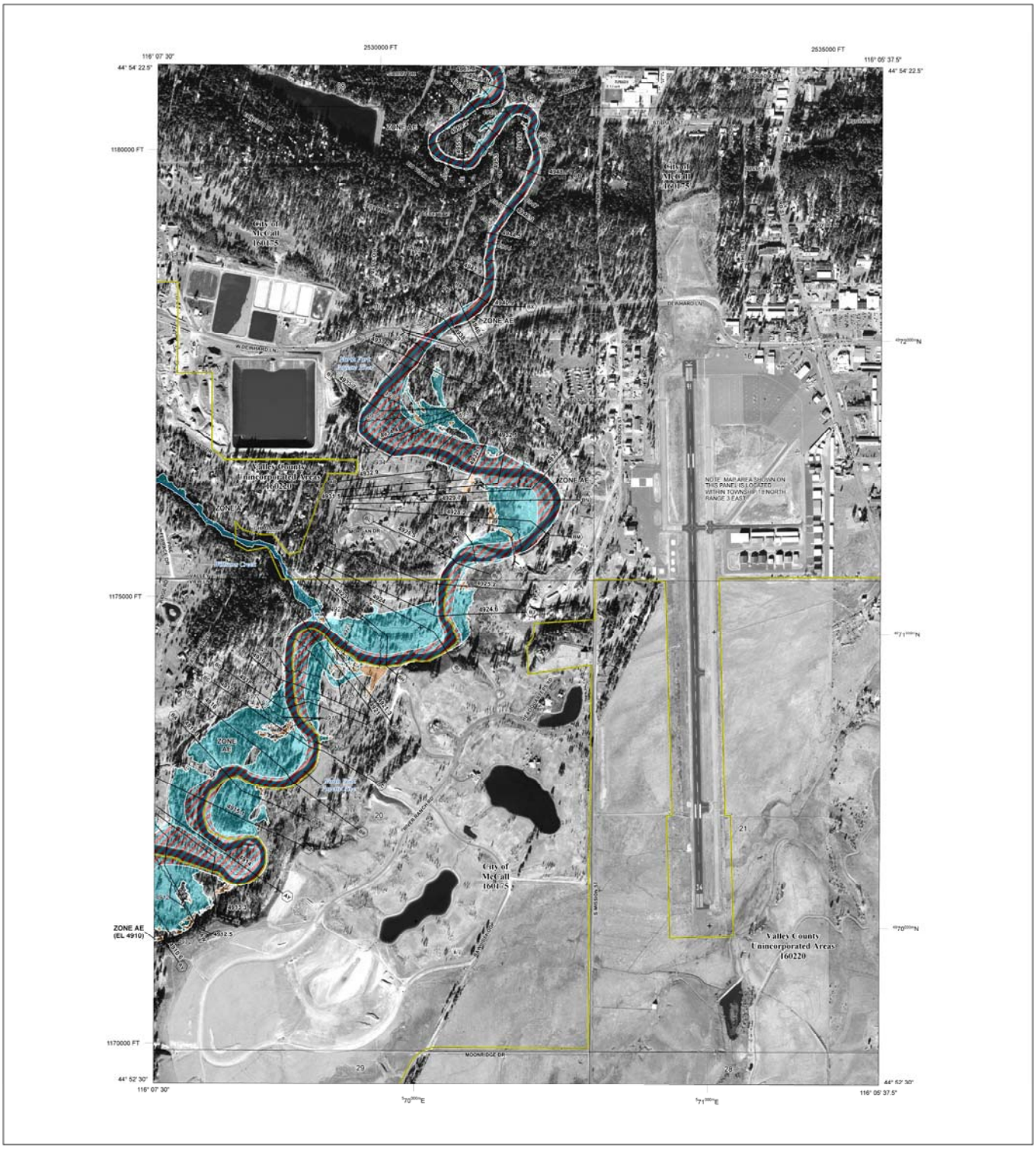
JAMES FRONK CONSULTING, LLC. 14028 NORWOOD RD PO BOX 576 McCALL, ID 83638 (208) 634-8093	WETLAND DELINEATION SANDERS RESIDENCE 221 MORGAN DRIVE MCCALL ID 83638 RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2	FIGURE: 3 DRAWN BY: ES DATE: 8/24/2020



JAMES FRONK CONSULTING, LLC. 14028 NORWOOD RD PO BOX 576 McCALL, ID 83638 (208) 634-8093	WETLAND IMPACT WITH BUILDING SANDERS RESIDENCE 221 MORGAN DRIVE MCCALL ID 83638 RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2	FIGURE: 4 DRAWN BY: ES DATE: 8/24/2020



JAMES FRONK CONSULTING, LLC. 14028 NORWOOD RD PO BOX 576 McCALL, ID 83638 (208) 634-8093	EROSION CONTROL SANDERS RESIDENCE 221 MORGAN DRIVE MCCALL ID 83638 RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2	FIGURE: 7 DRAWN BY: ES DATE: 8/24/2020



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT

HTTP://MSC.FEMA.GOV

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) *Zone A, V, A99* With BFE or Depth *Zone AE, AO, AH, VE, AR* Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X* Future Conditions 1% Annual Chance Flood Hazard *Zone X* Area with Reduced Flood Risk due to Levee See Notes. *Zone X*
OTHER AREAS	NO SCREEN Areas Determined to be Outside the 0.2% Annual Chance Floodplain *Zone X* Area of Undetermined Flood Hazard *Zone D*
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Levee, Dike, or Floodwall
OTHER FEATURES	18.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation (BFE) Coastal Transect Coastal Transect Baseline Profile Baseline Hydrographic Feature 513 Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by the United States Department of Agriculture (USDA). This information was derived from digital orthophotography at a 1-meter resolution from photography dated 2013.

SCALE

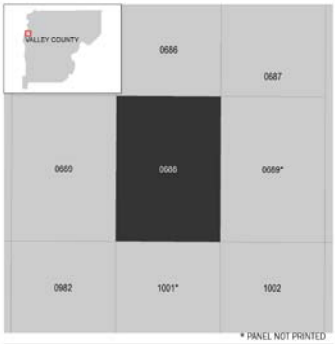
Map Projection:
NAD 1983 StatePlane Idaho West FIPS 1103 Feet;
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 500 feet 1:6,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

PANEL LOCATOR



* PANEL NOT PRINTED

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

VALLEY COUNTY, IDAHO
And Incorporated Areas

PANEL 688 OF 2375

FEMA

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
MCCALL, CITY OF	160175	0688	C
VALLEY COUNTY	160220	0688	C

VERSION NUMBER
2.3.3.2

MAP NUMBER
16085C0688C

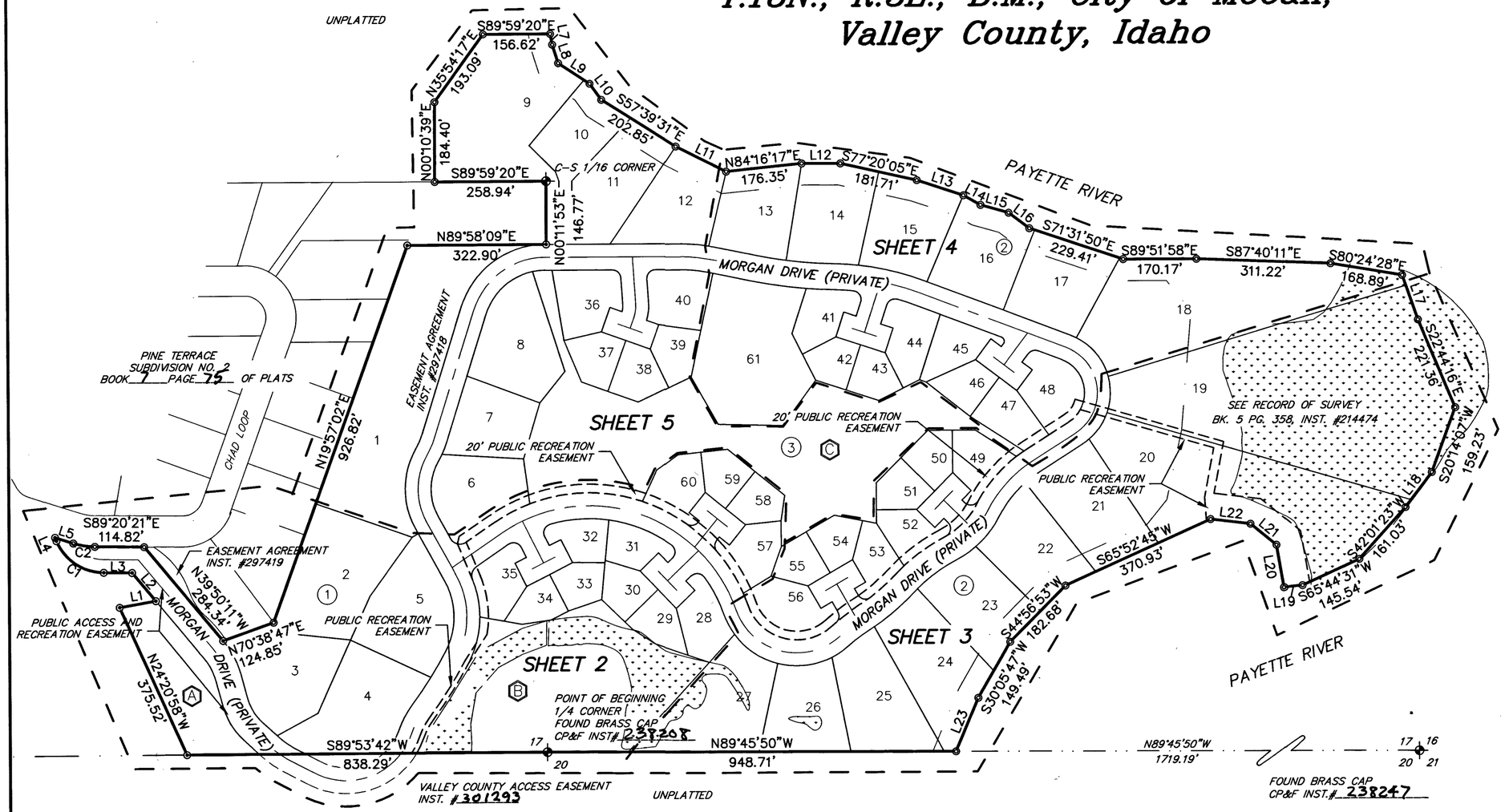
EFFECTIVE DATE
FEBRUARY 1, 2019

Book 10 Page 24 of Plats, Inst. # 301294

Instrument # 301294
VALLEY COUNTY, CASCADE, IDAHO
2005-10-07 11:56:11 No. of Pages: 6
Recorded for : RALPH MILLER
LELAND G. HEINRICH Fee: 11.00
Ex-Officio Recorder Deputy
Index to: PLAT

RIVER'S CROSSING SUBDIVISION

Located in the South 1/2 of Section 17, T.18N., R.3E., B.M., City of McCall, Valley County, Idaho



CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	DELTA	BEARING	CHORD
C1	120.00	139.67	78.96	66°41'22"	S55°59'40"E	131.92
C2	170.00	50.68	25.53	17°04'51"	S80°48'37"E	50.49

LINE TABLE		
LINE	LENGTH	BEARING
L1	85.52	S80°03'57"W
L2	85.44	S39°50'11"E
L3	66.05	S89°20'21"E
L4	8.78	S22°38'59"E
L5	44.60	S72°16'39"E
L6	90.60	S89°59'20"E
L7	25.42	S10°46'49"E
L8	45.16	S17°35'54"E
L9	87.28	S56°26'43"E
L10	45.95	S35°57'41"E
L11	130.85	S63°17'41"E
L12	90.06	S89°49'24"E
L13	114.09	S71°40'16"E
L14	45.84	S60°32'39"E
L15	67.84	S74°08'57"E
L16	60.04	S52°57'53"E
L17	108.98	S19°13'55"E
L18	101.79	S37°24'35"W
L19	42.63	S84°01'18"W
L20	99.96	N09°47'05"W
L21	77.60	N50°43'04"W
L22	93.21	N83°03'38"W
L23	134.45	S22°59'25"W

LEGEND

- SUBDIVISION BOUNDARY
- SETBACK LINE WHERE GREATER THAN STANDARD
- SHEET MATCH LINES
- FOUND 5/8" IRON PIN
- SET 5/8" X 30" REBAR MKD LS 8577
- FOUND 1/2" IRON PIN
- SET 1/2" X 24" REBAR MKD LS 8577
- FOUND BRASS CAP MONUMENT
- FOUND ALUMINUM CAP MONUMENT
- ANGLE POINT – NOTHING SET
- EASEMENT LINE
- (6) BLOCK NUMBER
- (C) OPEN SPACE PARCEL
- WETLANDS

SCALE: 1" = 200'

MONUMENT CERTIFICATE

THIS IS TO CERTIFY THAT THIS PLAT IS BEING RECORDED UNDER THE PROVISIONS OF IDAHO CODE 50-1331 THRU 50-1333 AND THAT ALL INTERIOR MONUMENTS WILL BE SET WITHIN ONE YEAR FROM THE RECORDING DATE OF THIS PLAT.

NOTES:

1. All roads and road rights of way depicted on this Plat are private, with the exception of the Valley County Access Easement granted by Valley County, Idaho and recorded on October 7, 2005 as Instrument No. 301293. Additionally, that portion of Morgan Drive between Chad Loop and the Valley County Access Easement, as depicted on this Plat, is the subject of a Public Access Easement. After completion of the private roads, including the Public Access Easement, such roads will be owned and maintained by the River's Crossing Association, as is further provided in the Private Road Declaration, which is being recorded concurrently with this Plat with the Office of Recorder of Valley County, as Instrument Number 301299.
2. Utilities will be completed as provided in the Declaration of Installation of Utilities, which is being recorded concurrently with this Plat with the Office of Recorder of Valley County, Idaho, as Instrument No. 301300.
3. All properties shown on this Plat are subject to and governed by the provisions of the General Declaration for River's Crossing ("General Declaration"), and the Articles of Incorporation and Bylaws for River's Crossing Association, as these three documents may be amended and supplemented, and which are being recorded concurrently with this Plat with the Office of Recorder of Valley County, Idaho, as Instrument Nos. 301296, 301297, and 301298.
4. All properties shown on this Plat are subject to and governed by the River's Crossing Design Guidelines and the River's Crossing Rules and Regulations, as may be amended or supplemented.
5. The Public Access Easement depicted on this Final Plat is dedicated to the public, including but not limited to the members of the River's Crossing Association, for motorized and non-motorized use, subject to the terms and conditions contained in the General Declaration. The Association shall maintain and repair the Public Access Easement and the Valley County Access Easement for its own use.
6. The Public Recreation Easements depicted on this Final Plat are dedicated to the public, including but not limited to the members of the River's Crossing Association, for non-motorized use, subject to the terms and conditions contained in the General Declaration. Public Recreation Easements may be used by the public for non motorized uses, to include pedestrian, bicyclists, and skiers, and the use of motorized equipment to maintain and prepare trails for the same. The Association shall have the authority to promulgate such rules as it deems reasonably necessary to maintain the Public Recreation Easements, including related to maintenance, noise, hours of use, and litter.
7. The Declarant reserves the right, without limitation, to assign its rights to any and all easements which are depicted on this Plat, in whole or in part.
8. Declarant shall have the right to construct trails in any Private Recreation Easement, Public Recreation Easement, road right of way or Open Space parcel, to be used for such recreational uses as the Declarant shall designate, including but not limited to the following uses: pedestrian, bicyclists, and skiers, subject to the terms and conditions contained in the General Declaration.
9. The repair and maintenance of all drainage facilities and improvements located within the Drainage Easements depicted on this Final Plat shall be the obligation of the River's Crossing Association.
10. No parking is permitted in the tee-driveways depicted on this Final Plat in Blocks 2 and 3.
11. (a) The police, fire, ambulance and other emergency services shall have full access to private roads depicted on this Final Plat exactly as if they were public roads; (b) The River's Crossing Association shall maintain a full twenty foot (20') width free of accumulations of snow and free of parked vehicles; (c) In the event of the failure of the River's Crossing Association to comply timely with subsection (b) immediately above, the City of McCall may clear snow and tow parked vehicles either with its own crews and equipment, or with specially hired crews and equipment; and, (d) In the event of either or both such City actions, the River's Crossing Association shall be liable to the City of McCall in the amount of the cost to the City of the doing of the work, plus a civil penalty of the greater of: (i) One thousand dollars ($1,000.00), or (ii) The amount of the cost to the City of the doing of the work.
12. The Open Space Parcels depicted on this Plat shall be used, managed and maintained in accordance with the General Declaration.
13. There shall be no further division of any Lot depicted on this Plat, as provided in the General Declaration, except that Lots 1, 6, 7 and 8 may be further divided by Declarant for more dense single family residential use or for multi family residential use, as may be approved by the City of McCall.
14. All easements depicted on this Plat are further defined and described in the General Declaration.
15. This Plat is subject to compliance with Idaho Code Section 31-3805.
16. The wetlands areas as identified on this Plat are subject to regulation by the Corps of Engineers (COE). Any proposed change must be submitted and reviewed and approved by the COE prior to any work being done.
17. The Public Access Easement as depicted on this Plat is for that portion of Morgan Drive located between Chad Loop and the boundary of the Valley County Access Easement.
18. All easements shown on this plat are perpetual and permanent and are subject to the terms and conditions of the General Declarations of River's Crossing.

HEALTH CERTIFICATE

Sanitary restrictions as required by Idaho Code, Title 50, Chapter 13 have been satisfied based on the State of Idaho, Department of Environmental Quality (DEQ) approval of the design plans and specifications and the conditions imposed on the developer for continued satisfaction of the sanitary restrictions. Buyer is cautioned that at the time of this approval, no drinking water or sewer/septic facilities were constructed. Building construction can be allowed with appropriate building permits if drinking water or sewer facilities have since been constructed or if the developer is simultaneously constructing those facilities. If the developer fails to construct facilities or meet the other conditions of DEQ, then sanitary restrictions may be reimposed, in accordance with Section 50-1326, Idaho Code, by the issuance of a certificate of disapproval, and no construction of any building or shelter requiring drinking water or sewer/septic facilities shall be allowed.

301295

John L. Lopini REHS 10/5/2005
DISTRICT HEALTH DEPARTMENT, EHS

PROFESSIONAL LAND SURVEYOR REGISTERED 8577 10/5/05 STATE OF IDAHO RALPH MILLER

SECESH ENGINEERING, INC.
McCall, Idaho

Book 10 Page 24 of Plats, Inst. # 301294

RIVER'S CROSSING SUBDIVISION

Located in the South 1/2 of Section 17, T.18N., R.3E., BM, City of McCall, Valley County, Idaho

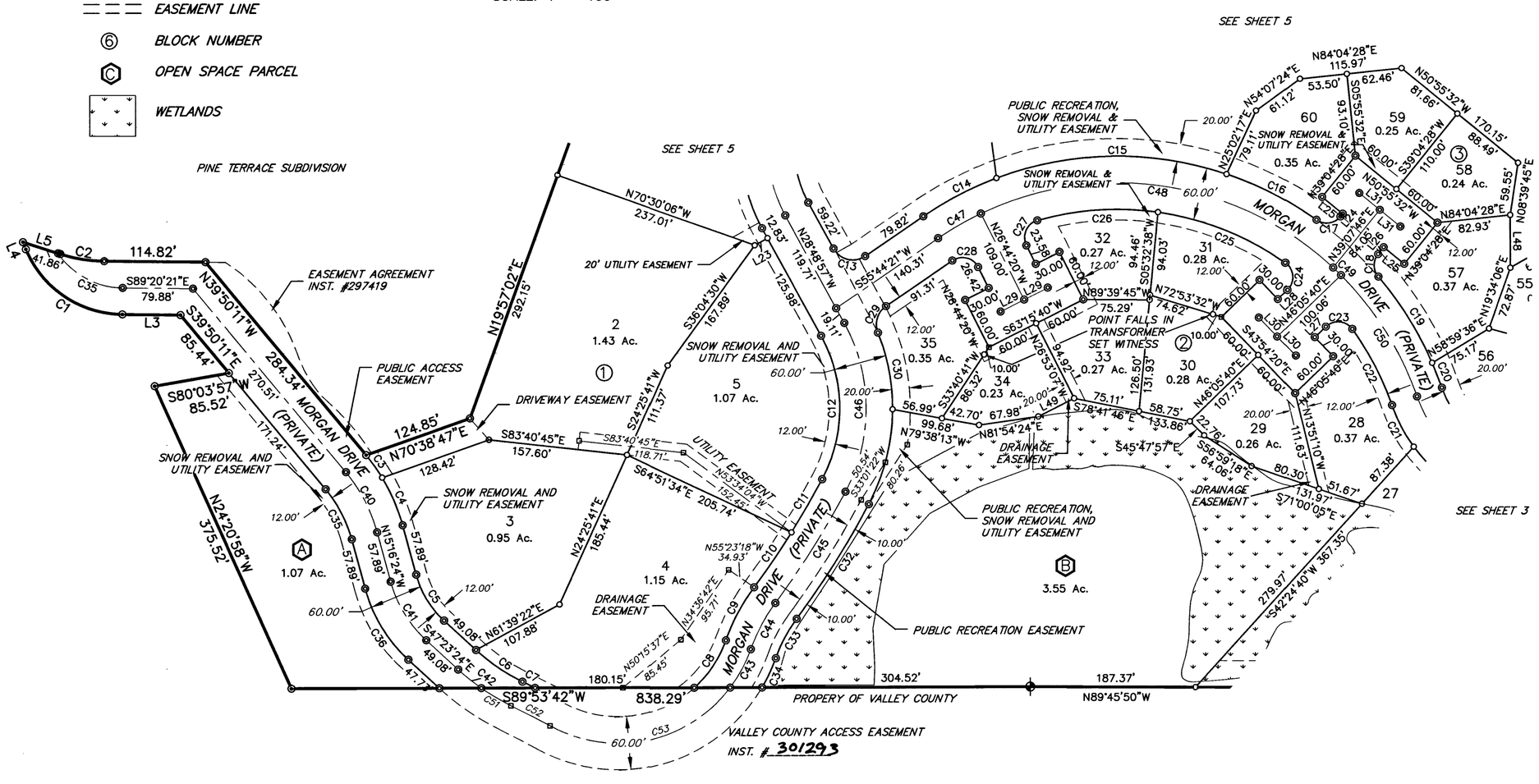
LEGEND

- SUBDIVISION BOUNDARY
- SETBACK LINES WHERE GREATER THAN STANDARD
- FOUND 5/8" IRON PIN
- SET 5/8" X 30" REBAR MKD LS 8577
- FOUND 1/2" IRON PIN
- SET 1/2" X 24" REBAR MKD LS 8577
- FOUND BRASS CAP MONUMENT
- FOUND ALUMINUM CAP MONUMENT
- ANGLE POINT – NOTHING SET
- EASEMENT LINE
- ⑥ BLOCK NUMBER
- Ⓒ OPEN SPACE PARCEL
- WETLANDS

SCALE: 1" = 100'

LINE TABLE		
LINE	LENGTH	BEARING
L3	66.05	S89°20'21"E
L4	8.78	S22°38'59"E
L5	44.60	S72°16'39"E
L23	16.58	N61°11'03"E
L24	4.05	N39°04'28"E
L25	30.00	S50°55'32"E
L26	10.02	N39°04'28"E
L27	17.25	N46°05'40"E
L28	14.73	N46°05'40"E
L29	30.00	N63°06'53"E
L30	30.00	S43°54'20"E
L31	30.00	S50°55'32"E
L48	59.63	N00°09'39"W
L49	45.62	N63°06'53"E

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	DELTA	BEARING	CHORD
C1	120.00	139.67	78.96	66°41'22"	S55°59'40"E	131.92
C2	170.00	50.68	25.53	17°04'51"	S80°48'37"E	50.49
C3	210.00	31.27	15.66	8°31'56"	N35°34'13"W	31.24
C4	210.00	58.76	29.57	16°01'51"	N23°17'19"W	58.56
C5	110.00	61.66	31.66	32°07'00"	S31°19'54"E	60.86
C6	220.00	64.13	32.29	16°42'07"	S55°44'28"E	63.90
C7	1030.00	15.93	7.97	0°53'11"	N63°38'56"W	15.94
C8	130.00	65.17	33.28	28°43'20"	N34°00'49"E	64.49
C9	230.00	68.26	34.38	17°00'12"	S28°09'15"W	68.01
C10	970.00	75.13	37.59	4°26'17"	N34°26'13"E	75.11
C11	970.00	69.48	34.76	4°06'14"	N30°09'57"E	69.47
C12	170.00	168.91	92.17	56°55'47"	N00°21'04"W	162.05
C13	25.00	41.65	27.50	95°26'43"	S76°32'18"E	36.99
C14	390.00	93.69	47.07	13°45'52"	S62°37'17"W	93.47
C15	390.00	266.44	138.65	39°08'35"	S89°04'31"W	261.29
C16	390.00	114.52	57.67	16°49'25"	N62°56'29"W	114.10
C17	20.00	30.16	18.78	86°23'46"	N82°16'21"E	27.38
C18	20.00	27.77	16.65	79°34'10"	S00°42'37"E	25.60
C19	390.00	115.31	58.08	16°56'26"	N32°01'29"W	114.89
C20	390.00	30.22	15.12	4°26'24"	N21°20'04"W	30.21
C21	180.00	53.27	26.83	16°57'22"	S27°35'33"E	53.08
C22	330.00	97.62	49.17	16°56'55"	N27°35'20"W	97.26
C23	20.00	34.15	22.94	97°50'33"	N84°59'04"W	30.15
C24	20.00	35.16	24.14	100°43'38"	N04°16'09"W	30.80
C25	330.00	156.67	79.84	27°12'09"	N68°14'02"W	155.21
C26	330.00	138.20	70.13	23°59'40"	S86°10'03"W	137.19
C27	20.00	35.22	24.22	100°54'33"	S23°42'57"W	30.84
C28	20.00	34.04	22.81	97°31'20"	N75°29'59"W	30.08
C29	25.00	33.84	20.08	77°33'13"	S16°57'44"W	31.31
C30	230.00	88.76	44.94	22°06'44"	N10°45'30"W	88.21
C31	230.00	111.66	56.95	27°48'58"	N14°12'21"E	110.57
C32	1030.00	153.56	76.92	8°32'31"	N32°23'05"E	153.42
C33	170.00	50.45	25.41	17°00'12"	S28°09'15"W	50.27
C34	190.00	36.67	18.39	11°03'31"	N25°10'54"E	36.61
C35	150.00	64.31	32.65	24°33'47"	N27°33'17"W	63.81
C36	170.00	95.29	48.93	32°07'00"	S31°19'54"E	94.05
C40	180.00	77.17	39.19	24°33'47"	N27°33'17"W	76.58
C41	140.00	78.48	40.30	32°07'00"	S31°19'54"E	77.45
C42	250.00	33.71	16.88	7°43'29"	S51°15'09"E	33.68
C43	160.00	49.46	24.93	17°42'42"	N28°30'30"E	49.26
C44	200.00	59.35	29.90	17°00'12"	S28°09'15"W	59.14
C45	1000.00	149.09	74.68	8°32'31"	N32°23'05"E	148.95
C46	200.00	198.72	108.43	56°55'46"	N00°21'04"W	190.65
C47	360.00	55.93	28.02	8°54'07"	S60°11'24"W	55.88
C48	360.00	429.01	244.10	68°16'46"	N81°13'10"W	404.07
C49	360.00	12.24	6.12	1°56'54"	N46°06'20"W	12.24
C50	360.00	163.47	83.17	26°01'01"	N32°07'22"W	162.07
C51	250.00	39.17	19.63	8°58'38"	S59°36'12"E	39.13
C52	1000.00	49.76	24.89	2°51'04"	N62°39'59"W	49.76
C53	160.00	227.30	137.61	81°23'41"	N78°03'42"E	208.66



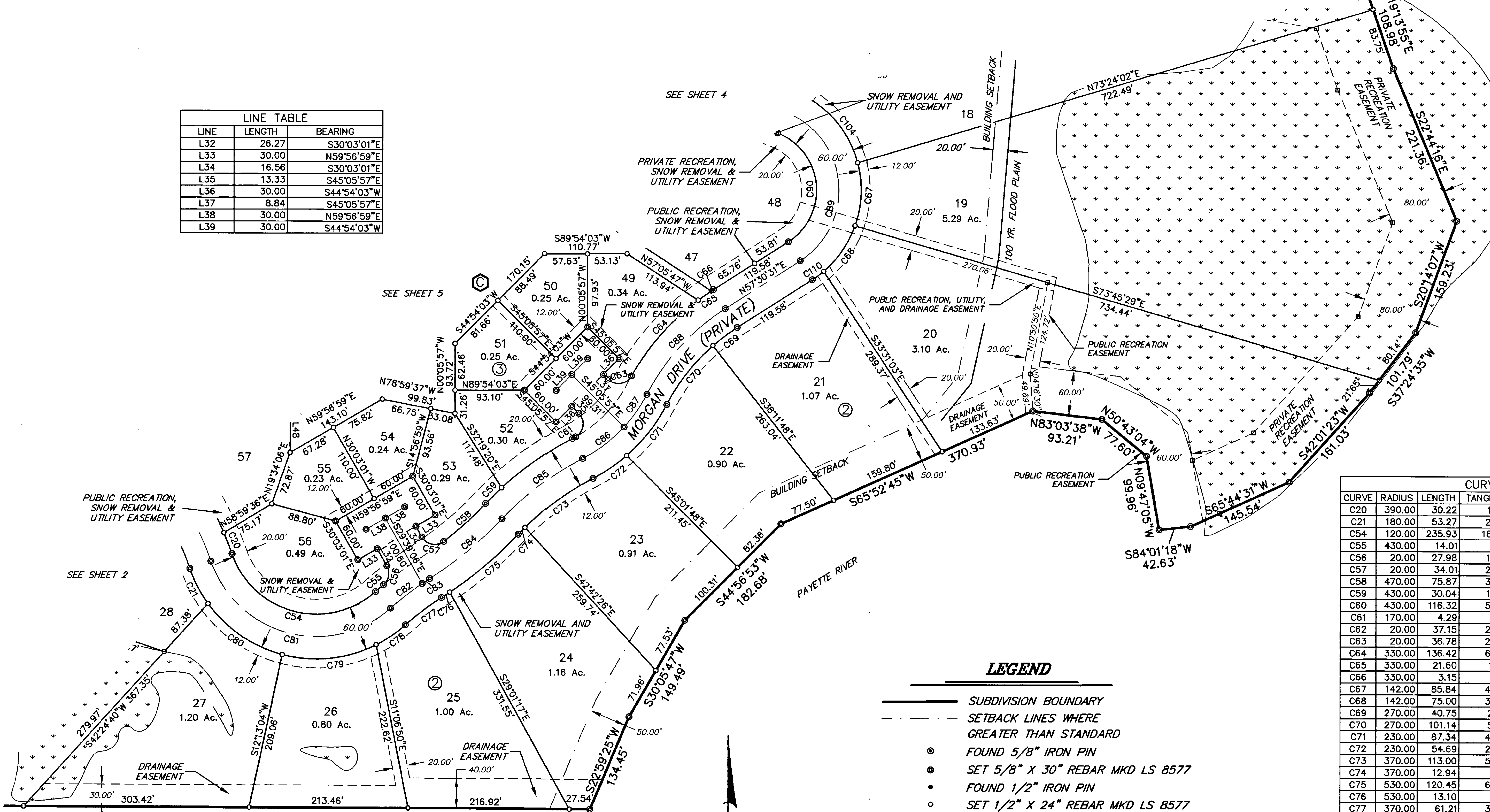
SECESH ENGINEERING, INC.
McCall, Idaho

Book 10 Page 24 of Plats, Inst. # 301294

RIVER'S CROSSING SUBDIVISION

Located in the South 1/2 of Section 17, T.18N., R.3E., BM, City of McCall, Valley County, Idaho

LINE TABLE		
LINE	LENGTH	BEARING
L32	26.27	S30°03'01"E
L33	30.00	N59°56'59"E
L34	16.56	S30°03'01"E
L35	13.33	S45°05'57"E
L36	30.00	S44°54'03"W
L37	8.84	S45°05'57"E
L38	30.00	N59°56'59"E
L39	30.00	S44°54'03"W



LEGEND

- SUBDIVISION BOUNDARY
- SETBACK LINES WHERE GREATER THAN STANDARD
- FOUND 5/8" IRON PIN
- SET 5/8" X 30" REBAR MKD LS 8577
- FOUND 1/2" IRON PIN
- SET 1/2" X 24" REBAR MKD LS 8577
- FOUND BRASS CAP MONUMENT
- FOUND ALUMINUM CAP MONUMENT
- ANGLE POINT – NOTHING SET
- EASEMENT LINE
- ⑥ BLOCK NUMBER
- Ⓒ OPEN SPACE PARCEL
- WETLANDS

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	DELTA	BEARING	CHORD
C20	390.00	30.22	15.12	4°26'24"	N21°20'04"W	30.21
C21	180.00	53.27	26.83	16°57'23"	S27°35'33"E	53.08
C54	120.00	235.93	180.10	112°38'57"	S75°26'20"E	199.73
C55	430.00	14.01	7.01	1°52'01"	S49°10'12"W	14.01
C56	20.00	27.98	16.83	80°09'13"	N10°01'36"E	25.75
C57	20.00	34.01	22.77	97°25'23"	S78°45'42"E	30.06
C58	470.00	75.87	38.02	9°14'57"	N47°54'08"E	75.79
C59	430.00	30.04	15.03	4°00'12"	S45°16'45"W	30.04
C60	430.00	116.32	58.52	15°29'59"	S55°01'51"W	115.97
C61	170.00	4.29	2.14	1°26'43"	N62°03'29"E	4.29
C62	20.00	37.15	26.75	106°26'05"	N08°07'05"E	32.04
C63	20.00	36.78	26.24	105°22'36"	N82°12'45"E	31.81
C64	330.00	136.42	69.20	23°41'10"	S41°22'02"W	135.45
C65	330.00	21.60	10.81	3°45'02"	S55°05'09"W	21.60
C66	330.00	3.15	1.58	0°32'51"	S57°14'05"W	3.15
C67	142.00	85.84	44.27	34°38'04"	N02°16'55"E	84.54
C68	142.00	75.00	38.40	30°15'43"	N34°43'48"E	74.13
C69	270.00	40.75	20.41	8°38'47"	S53°11'07"W	40.71
C70	270.00	101.14	51.17	21°27'48"	S38°07'50"W	100.55
C71	230.00	87.34	44.20	21°45'24"	N38°16'38"E	86.81
C72	230.00	54.69	27.48	13°37'30"	N55°58'05"E	54.57
C73	370.00	113.00	56.95	17°29'57"	S54°01'52"W	112.57
C74	370.00	12.94	6.47	2°00'14"	S44°16'46"W	12.94
C75	530.00	120.45	60.48	13°01'16"	N49°47'17"E	120.19
C76	530.00	13.10	6.55	1°25'00"	N57°00'25"E	13.10
C77	370.00	61.21	30.68	9°28'44"	S52°58'33"W	61.14
C78	180.00	47.51	23.89	15°07'25"	N55°47'54"E	47.37
C79	180.00	129.79	67.86	41°18'45"	N84°00'59"E	126.99
C80	180.00	123.33	64.20	39°15'24"	S55°41'57"E	120.93
C81	150.00	294.91	225.12	112°38'57"	S75°26'20"E	249.66
C82	400.00	54.10	27.09	7°44'57"	S52°06'40"W	54.06
C83	400.00	12.08	6.04	1°43'47"	S56°51'02"W	12.07
C84	500.00	125.99	63.33	14°26'16"	N50°29'47"E	125.66
C85	400.00	136.16	68.74	19°30'11"	S53°01'45"W	135.50
C86	200.00	69.98	35.35	20°02'48"	N52°45'26"E	69.62
C87	200.00	53.53	26.93	15°20'06"	N35°03'59"E	53.37
C88	300.00	157.65	80.69	30°06'35"	S42°27'13"W	155.85
C89	112.00	247.99	223.97	126°51'53"	N05°55'25"W	200.35
C90	82.00	181.56	163.98	126°51'53"	N05°55'25"W	146.68
C110	142.00	18.95	9.49	7°38'52"	N53°41'05"E	18.94

SECESH ENGINEERING, INC.
McCall, Idaho

Book 10 Page 24 of Plats, Inst. # 301294

RIVER'S CROSSING SUBDIVISION

Located in the South 1/2 of Section 17, T.18N., R.3E., BM, City of McCall, Valley County, Idaho

LEGEND

- SUBDIVISION BOUNDARY
- SETBACK LINES WHERE GREATER THAN STANDARD
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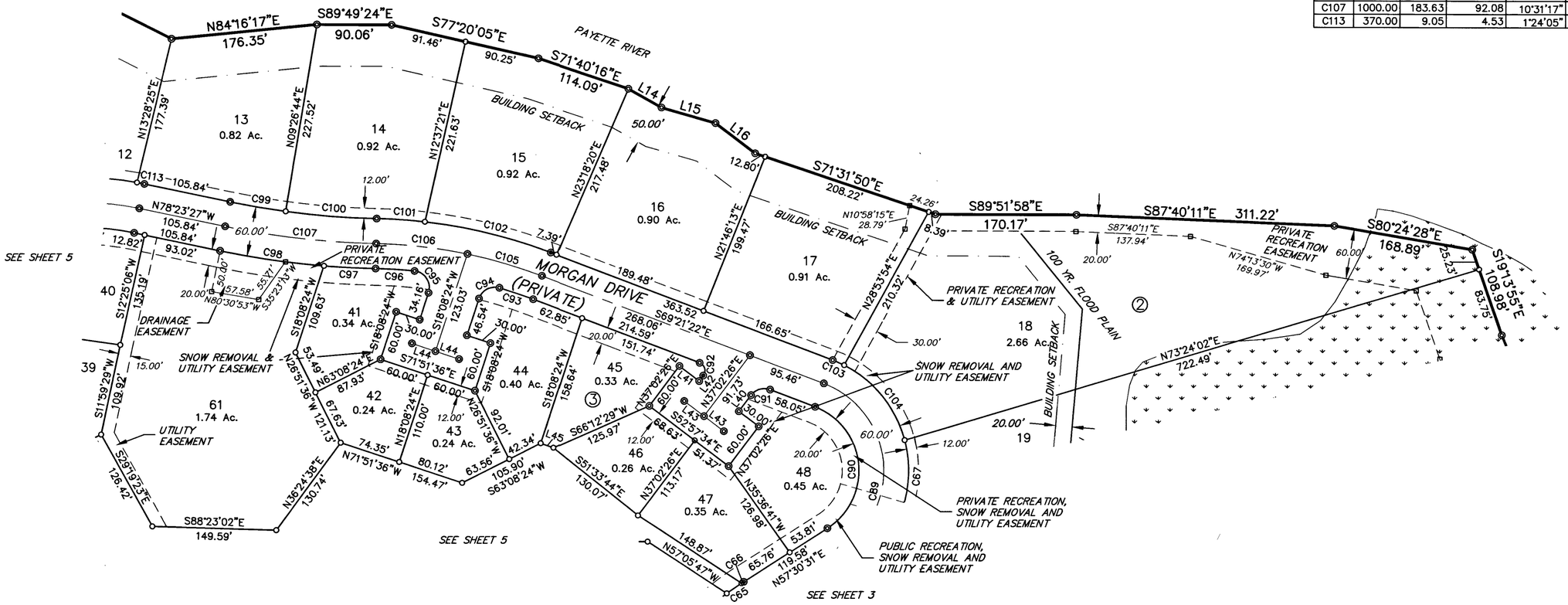
- FOUND ALUMINUM CAP MONUMENT
- ANGLE POINT – NOTHING SET
- EASEMENT LINE
- (6) BLOCK NUMBER
- (C) OPEN SPACE PARCEL
- WETLANDS

SCALE: 1" = 100'

LINE TABLE		
LINE	LENGTH	BEARING
L40	24.32	N37°02'26"E
L41	30.00	S52°57'34"E
L42	8.26	N37°02'26"E
L43	30.00	S52°57'34"E
L44	30.00	S71°51'36"E
L45	16.41	S70°57'17"E

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	DELTA	BEARING	CHORD
C65	330.00	21.60	10.81	3°45'02"	S55°05'09"W	21.60
C66	330.00	3.15	1.58	0°32'51"	S57°14'05"W	3.15
C90	82.00	181.56	163.98	126°51'53"	N05°55'25"W	146.68
C91	20.00	25.69	14.96	73°36'12"	S73°50'32"W	23.96
C92	10.00	18.57	13.37	106°23'48"	N16°09'28"W	16.01
C93	570.00	42.85	21.43	4°18'25"	N71°30'34"W	42.84
C94	20.00	30.79	19.38	88°11'49"	S62°14'19"W	27.84
C95	20.00	35.71	24.84	102°18'53"	N33°01'03"W	31.15
C96	570.00	47.13	23.58	4°44'15"	N86°32'36"W	47.12
C97	1030.00	62.38	31.20	3°28'12"	S87°10'38"E	62.37
C98	1030.00	126.76	63.46	7°03'05"	S81°54'59"E	126.68
C99	970.00	67.87	33.95	4°00'32"	S80°23'43"E	67.85
C100	970.00	110.26	55.19	6°30'45"	S85°39'21"E	110.20
C101	630.00	58.47	29.25	5°19'03"	N86°15'12"W	58.45
C102	630.00	156.56	78.69	14°14'19"	N76°28'32"W	156.16
C103	142.00	15.17	7.59	6°07'22"	N66°17'41"W	15.17
C104	142.00	119.45	63.52	48°11'53"	N39°08'04"W	115.96
C105	600.00	93.67	46.93	8°56'41"	N73°49'42"W	93.57
C106	600.00	111.12	55.72	10°36'41"	N83°36'23"W	110.96
C107	1000.00	183.63	92.08	10°31'17"	S83°39'05"E	183.37
C113	370.00	9.05	4.53	1°24'05"	N79°05'29"W	9.05

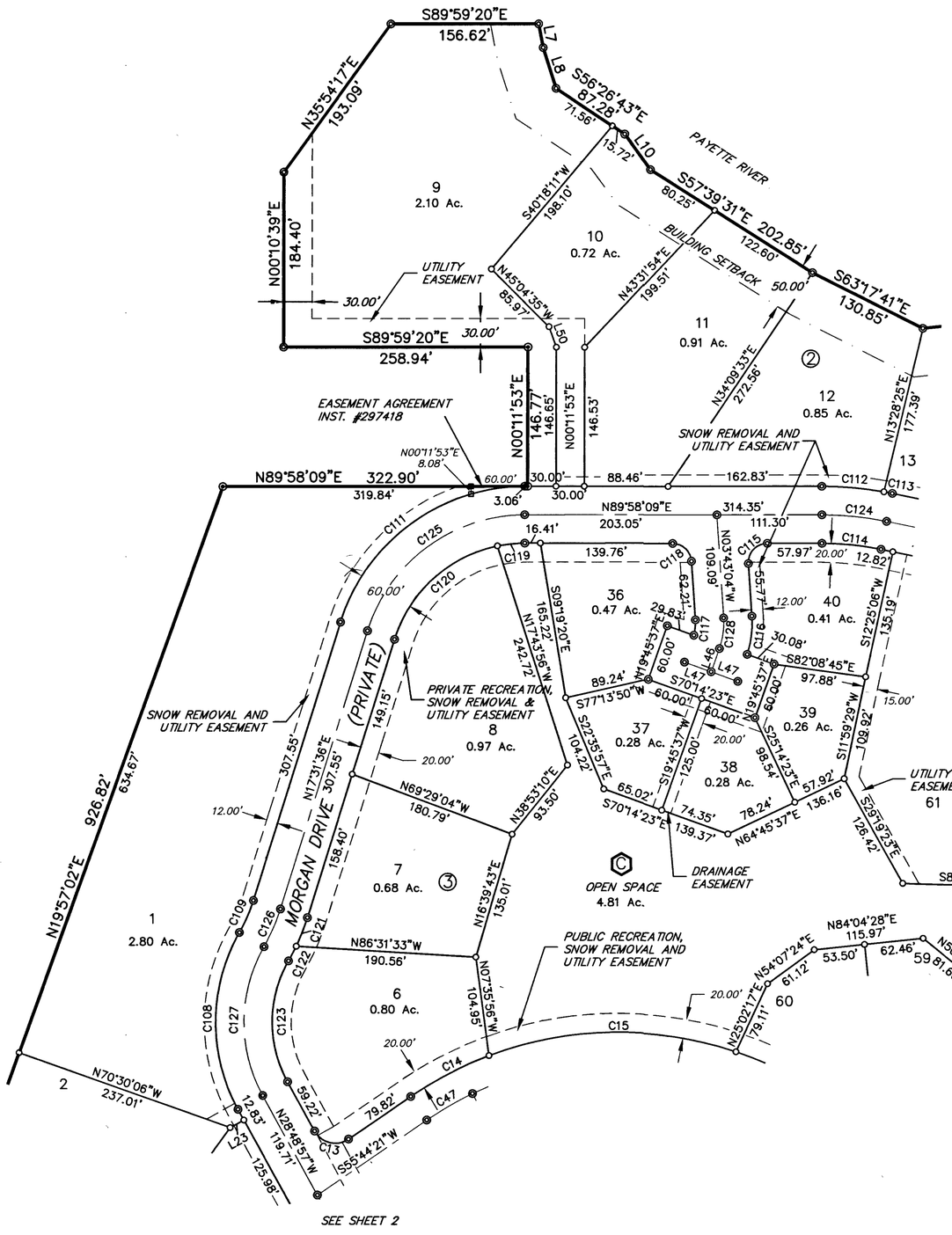


SECESH ENGINEERING, INC.
McCall, Idaho

Book 10 Page 24 of Plats, Inst. # 301294

RIVER'S CROSSING SUBDIVISION

Located in the South 1/2 of Section 17, T.18N., R.3E., BM, City of McCall, Valley County, Idaho



LEGEND

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- ⑥ BLOCK NUMBER
- Ⓒ OPEN SPACE PARCEL
- WETLANDS

N

SCALE: 1" = 100'

CURVE TABLE						
CURVE	RADIUS	LENGTH	TANGENT	DELTA	BEARING	CHORD
C13	25.00	41.65	27.50	95°26'43"	S76°32'18"E	36.99
C14	390.00	93.69	47.07	13°45'52"	S62°37'17"W	93.47
C15	390.00	266.44	138.65	39°08'35"	S89°04'31"W	261.29
C65	330.00	21.60	10.81	3°45'02"	S55°05'09"W	21.60
C66	330.00	3.15	1.58	0°32'51"	S57°14'05"W	3.15
C108	190.00	194.87	106.98	58°45'48"	S00°33'57"W	186.44
C109	170.00	36.85	18.50	12°25'15"	N23°44'14"E	36.78
C111	205.00	259.19	150.15	72°26'33"	S53°44'53"W	242.27
C112	370.00	66.12	33.15	10°14'19"	N84°54'41"W	66.03
C113	370.00	9.05	4.53	1°24'05"	N79°05'29"W	9.05
C114	310.00	62.98	31.60	11°38'24"	N84°12'39"W	62.87
C115	20.00	32.70	21.33	93°41'14"	S43°07'33"W	29.18
C116	110.00	40.96	20.72	21°20'11"	N06°57'01"E	40.73
C117	50.00	16.37	8.26	18°45'44"	N05°39'48"E	16.30
C118	20.00	30.13	18.75	86°18'46"	N46°52'27"W	27.36
C119	145.00	29.21	14.66	11°32'33"	S84°11'53"W	29.16
C120	145.00	154.12	85.24	60°54'01"	S47°58'36"W	146.97
C121	230.00	32.40	16.23	8°04'17"	N21°33'44"E	32.37
C122	230.00	17.46	8.73	4°20'59"	N27°46'22"E	17.46
C123	130.00	133.33	73.20	58°45'48"	S00°33'57"W	127.56
C124	340.00	69.07	34.66	11°38'24"	N84°12'39"W	68.95
C125	175.00	221.26	128.18	72°26'33"	S53°44'53"W	206.82
C126	200.00	43.36	21.76	12°25'15"	N23°44'14"E	43.27
C127	160.00	164.10	90.09	58°45'48"	S00°33'57"W	157.00
C128	80.00	32.78	16.62	23°28'41"	N08°01'16"E	32.55

LINE TABLE		
LINE	LENGTH	BEARING
L7	25.42	S10°46'49"E
L8	45.16	S17°35'54"E
L10	45.95	S35°57'41"E
L23	16.58	N61°11'03"E
L45	16.41	S70°57'17"E
L46	25.89	N19°45'37"E
L47	30.00	S70°14'23"E
L48	59.63	N00°09'39"W
L50	22.92	S19°43'47"E

SECESH ENGINEERING, INC.
McCall, Idaho

RIVER'S CROSSING SUBDIVISION

Located in the South 1/2 of Section 17, T.18N., R.3E., BM, City of McCall, Valley County, Idaho

CERTIFICATE OF OWNER

KNOW ALL MEN BY THESE PRESENTS, THAT THE UNDERSIGNED IS THE OWNER OF THE PROPERTY HEREINAFTER DESCRIBED:

A parcel of land located in the southH 1/2 of Section 17, T.18N., R.3 E., B.M., Valley County, Idaho, more particularly described as;

BEGINNING at the south 1/4 corner of said Section 17; thence, along the south line of said Section 17,
1.) S.89°53'42"W., 838.30 feet; thence, departing said section line.
2.) N.24°20'58"W., 375.52 feet; thence,
3.) N.80°03'57"E., 85.52 feet; thence,
4.) N.39°50'11"W., 85.43 feet; thence,
5.) N.89°20'21"W., 66.05 feet to the beginning of a tangent curve; thence,
6.) Northwesterly along said curve to the right having a radius of 120.00 feet, an arc length of 139.67 feet, through a central angle of 66°41'22", and a chord bearing and distance of N.55°59'40"W., 131.92 feet; thence, tangent from said curve,
7.) N.22°38'59"W., 8.78 feet to a point on the southerly Right-of-Way line for Chad Loop; thence, along said Right-of-Way,
8.) S.72°16'39"E., 44.60 feet to the beginning of a tangent curve; thence,
9.) Southeasterly along said curve to the left having a radius of 170.00 feet, an arc length of 50.68 feet, through a central angle of 17°04'51", and a chord bearing and distance of S.80°48'37"E., 50.49 feet; thence, tangent from said curve,
10.) S.89°20'21"E., 114.82 feet; thence, departing said Right-of-Way, along the boundary of Pine Terrace Subdivision No. 2,
11.) S.39°50'11"E., 284.34 feet; thence,
12.) N.70°38'47"E., 124.85 feet; thence,
13.) N.19°57'02"E., 926.82 feet; thence, departing said subdivision boundary,
14.) N.89°58'09"E., 322.90 feet; thence,
15.) N.0°11'53"E., 146.77 feet; thence,
16.) N.89°59'20"W., 258.94 feet; thence,
17.) N.0°10'39"E., 184.40 feet; thence,
18.) N.35°54'17"E., 193.09 feet; thence,
19.) S.89°59'20"E., 156.62 feet to a point on the mean high water line of the Payette River; thence, along said high water line through the following courses:
20.) S.10°46'49"E.,25.42 feet; thence,
21.) S.17°35'54"E., 45.16 feet; thence,
22.) S.56°26'43"E., 87.28 feet; thence,
23.) S.35°57'41"E., 45.95 feet; thence,
24.) S.57°39'31"E., 202.85 feet; thence,
25.) S.63°17'41"E., 130.85 feet; thence,
26.) N.84°16'17"E., 176.35 feet; thence,
27.) S.89°49'24"E., 90.06 feet; thence,
28.) S.77°20'05"E., 181.71 feet; thence,
29.) S.71°40'16"E., 114.09 feet; thence,
30.) S.60°32'39"E., 45.84 feet; thence,
31.) S.74°08'57"E., 67.84 feet; thence,
32.) S.52°57'53"E., 60.04 feet; thence,
33.) S.71°31'50"E., 229.40 feet; thence,
34.) S.89°51'58"E., 170.17 feet; thence,
35.) S.87°40'11"E., 311.22 feet; thence,
36.) S.80°24'28"E., 168.89 feet; thence,
37.) S.19°13'55"E., 108.98 feet; thence,
38.) S.22°44'16"E., 221.36 feet; thence,
39.) S.20°14'07"W., 159.23 feet; thence,
40.) S.37°24'35"W., 101.79 feet; thence,
41.) S.42°01'23"W., 161.03 feet; thence,
42.) S.65°44'31"W., 145.54 feet; thence,
43.) S.84°01'18"W., 42.62 feet; thence,
44.) N.9°47'05"W., 99.96 feet; thence,
45.) N.50°43'04"W., 77.60 feet; thence,
46.) N.83°03'38"W., 93.21 feet; thence,
47.) S.65°52'45"W., 370.94 feet; thence,
48.) S.44°56'53"W., 182.68 feet, thence,
49.) S.30°05'47"W., 149.49 feet; thence,
50.) S.22°59'25"W., 134.45 feet to a point on the south line of said Section 17; thence, along said section line,
51.) N.89°45'50"W., 948.71 feet to the POINT OF BEGINNING.

CONTAINING 67.58 Acres, more or less.
SUBJECT TO all Covenants, Rights-of-Way and Easements of Record.

The Public Access Easement and the Public Recreation Easements are hereby dedicated to the public, including but not limited to the members of the River's Crossing Association, subject to the terms and conditions on the first page of this Final Plat and in the General Declaration. All roads and road rights of way, all easements, and all Open Space Parcels which are depicted on this Plat are dedicated for the use and enjoyment of the members of the River's Crossing Association, together with their guests, invitees, and assigns, subject to the terms, conditions and reserved Declarant rights which are contained in the General Declaration.

RIVER'S CROSSING, LLC

By: _____
Robert A. Hunt, Manager

ACKNOWLEDGMENT

STATE OF IDAHO,)
) ss.
County of Valley.)

On this 31st day of August, 2005, before me, the undersigned, a Notary Public in and for said State, personally appeared ROBERT A. HUNT, known or identified to me to be the Manager of RIVER'S CROSSING LLC, the limited liability company that executed the instrument or the person who executed the instrument on behalf of said limited liability company, and acknowledged to me that such company executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written.

Maria McConnell
NOTARY PUBLIC FOR IDAHO
My Commission Expires: 6/30/2011

MARIA McCONNELL NOTARY PUBLIC STATE OF IDAHO

APPROVAL OF THE CITY PLANNING AND ZONING COMISSION

ACCEPTED AND APPROVED THIS 27 DAY OF September 2005, BY THE CITY OF McCALL PLANNING AND ZONING COMMISSION.

_____
CHAIRMAN

APPROVAL OF THE CITY ENGINEER

I, THE UNDERSIGNED CITY ENGINEER IN AND FOR THE CITY OF McCALL, VALLEY COUNTY, IDAHO, HEREBY APPROVE THIS PLAT OF "RIVERS CROSSING SUBDIVISION".

CH2M HILL Elizabeth B Roberts
CITY ENGINEER ~ McCALL, IDAHO 9/27/05

APPROVAL OF THE CITY PUBLIC WORKS DIRECTOR

I, THE UNDERSIGNED CITY WORKS SUPERINTENDENT IN AND FOR THE CITY OF McCALL, VALLEY COUNTY, IDAHO, HEREBY APPROVE THIS PLAT OF "RIVERS CROSSING SUBDIVISION".

William D Keating 9-30-05
PUBLIC WORKS DIRECTOR ~ McCALL, IDAHO

APPROVAL OF THE CITY OF McCALL

I, THE UNDERSIGNED CITY CLERK IN AND FOR THE CITY OF McCALL, VALLEY COUNTY, IDAHO, HEREBY CERTIFY THAT AT A REGULAR MEETING OF THE CITY COUNCIL HELD ON THE 11th DAY OF August, 2005, THIS PLAT OF "RIVERS CROSSING SUBDIVISION" WAS DULY ACCEPTED AND APPROVED.

Dan Chi
CITY CLERK ~ McCALL, IDAHO

CERTIFICATE OF COUNTY SURVEYOR

I, JOHN RUSSELL, REGISTERED PROFESSIONAL LAND SURVEYOR FOR VALLEY COUNTY, IDAHO, DO HEREBY CERTIFY THAT I HAVE CHECKED THIS PLAT AND THAT IT COMPLIES WITH THE STATE OF IDAHO CODE RELATING TO PLATS AND SURVEYS.

PROFESSIONAL LAND SURVEYOR REGISTERED 6021 STATE OF IDAHO JOHN RUSSELL

John Russell 10/5/05
VALLEY COUNTY SURVEYOR

CERTIFICATE OF SURVEYOR

I, RALPH MILLER, DO HEREBY CERTIFY THAT I AM A PROFESSIONAL LAND SURVEYOR IN THE STATE OF IDAHO, AND THAT THIS PLAT AS DESCRIBED IN THE "CERTIFICATE OF OWNERS" WAS DRAWN FROM THE FIELD NOTES OF A SURVEY MADE ON THE GROUND UNDER MY DIRECT SUPERVISION AND ACCURATELY REPRESENTS THE POINTS PLATTED HEREON, AND IS IN CONFORMITY WITH THE STATE OF IDAHO CODE RELATING TO PLATS AND SURVEYS.

RALPH MILLER
IDAHO NO. 8577

PROFESSIONAL LAND SURVEYOR REGISTERED 8577 STATE OF IDAHO RALPH MILLER 10/5/05

CERTIFICATE OF COUNTY TREASURER

I, THE UNDERSIGNED, COUNTY TREASURER IN AND FOR THE COUNTY OF VALLEY, STATE OF IDAHO, PER THE REQUIREMENTS OF I.C. 50-1308, DO HEREBY CERTIFY THAT ANY AND ALL CURRENT AND/OR DELINQUENT COUNTY PROPERTY TAXES FOR THE PROPERTY INCLUDED IN THIS SUBDIVISION HAVE BEEN PAID IN FULL. THIS CERTIFICATION IS VALID FOR THE NEXT THIRTY (30) DAYS ONLY.

DATE October 7-2005

Glenna K. Young, Treasurer
COUNTY TREASURER

RP18N03E176605
RP18N03E176657

SECESH ENGINEERING, INC.
McCall, Idaho

City of McCall
COMMUNITY DEVELOPMENT

www.mccall.id.us

216 East Park Street
McCall, Idaho 83638

Phone 208-634-7052
Main 208-634-7142
Fax 208-634-3038

Subject: FPDP-23-01
From: Brian Parker, City Planner
Date: September 12, 2023

The intention of this Memorandum is to provide additional information regarding the denial of FPDP-23-01

The applicant has appealed the denial of FPDP-23-01. The basis of the appeal is as follows (staff analysis in *italics*).

1. **No Building Permit is required for fill, but in an abundance of caution, the Sanders will simultaneously apply for a building permit.**
   The following McCall Code Sections are relevant to this statement:

   McCall Code Section 3.7.022(B)
   No building and no land filling shall be permitted within a floodway and no building within an area of special flood hazard as such terms are defined in title IX, chapter 8, "Flood Control Regulations (Overlay)", of this code, unless the applicant complies with the standards set forth in that chapter.
   McCall Code Section 3.8.02(G)
   Building Permit Required: Until a valid building permit has been issued by the city of McCall, no construction work, including grading, blasting, filling, trenching, tree removal, etc., may be started, except as permitted in section 3.8.03 of this chapter.
   McCall Code Section 9.8.031
   This chapter shall apply to all special flood hazard areas within the jurisdiction of the City of McCall. Nothing in this chapter is intended to allow uses or structures that are otherwise prohibited by the Zoning Ordinance.
   McCall Code Section 9.8.034
   No structure or land shall hereafter be located, extended, converted, altered, or developed in any way without full compliance with the terms of this chapter and other applicable regulations.
   McCall Code Section 9.8.035
   This chapter shall not in any way repeal, abrogate, impair, or remove the necessity of compliance with any other laws, ordinances, regulations, easements, covenants, or deed restrictions, etcetera. However, where this chapter and another conflict or overlap, whichever imposes more stringent or greater restrictions shall control.

As the applicant has not indicated the purpose or demonstrated compliance with the requirements of McCall Code, no building permit may be issued, and therefor no fill may occur.

2. **There will be no harm, and the Administrator provides no basis for the assertion that unpermitted harm would occur if the permit were granted.**
   McCall Code Section 3.7.023(2) defines harm as:
   a. *The creation of conditions which foster runoff of, or other source of fertilizers, toxic substances, or other pollutants or contaminants, into the water;*
   b. *The excessive clearing of natural vegetation or change of natural landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line;*
   c. *The removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge;*
   d. *The filling or dredging of lake bottom or wetlands;*
   e. *The erection of visual barriers between the lake or river and the roads on the uplands, beyond the extent reasonably necessary for an owner's usage of the land for a permitted use; or*
   f. *The creation of any other condition which would be inconsistent with best management practices under, or threaten a violation of, state and federal storm and melt water regulatory programs to which the city is subject, or fail otherwise to be consistent with other city programs in these regards, all as established to the satisfaction of the city.*

   The first sentence of the applicant's appeal document for this section states "Currently, the Sanders are not requesting a permit to "build" a home or any kind of structure." As the applicant is not proposing to develop the land beyond modifying the 1% floodplain boundary, <u>any</u> clearing of natural vegetation or change of natural landforms within the area between the water pool shore contour and the fifty foot (50') building setback line is excessive, and therefore "harm" is occurring pursuant to McCall Code Section 3.7.032(C)(2)(b). Additionally, the applicant's floodplain development permit is explicitly calling for the filling of wetlands, which is included in the definition of "harm" in McCall Code Section 3.7.032(C)(2)(d).

3. **The proposed site grading will comply with MCC and the minimum necessary for development of the site.**
   Again, as no development beyond modifying the 1% floodplain boundary is proposed, there is no site grading necessary.

From:	Brian Parker
To:	Steve Millemann
Cc:	James Fronk; Morgan Stroud; Nathan Stewart; Michelle Groenevelt
Bcc:	William L. Punkoney
Subject:	RE: River"s Crossing Lot 19 Block 2 - CLOMR Request
Date:	Thursday, August 18, 2022 1:18:00 PM
Attachments:	image001.png image002.png

Steve,

Thank you for meeting with us to discuss options on this lot. After discussing with the team, we have determined that while you are welcome to apply for an Administrative Design Review approval for landscaping only to facilitate the construction of a floodplain berm, I am unlikely to approve it as presented. Here is my general reasoning:

- MCC 3.7.023(C)(1)(c) prohibits construction, alteration, or activity which causes harm to wetlands. Harm is defined in MCC 3.7.023(C)(2) and includes "excessive clearing of natural vegetation or change of natural landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line."
- MCC 3.8.13(4) states "On those sites where there exists vegetation of a significant or sensitive character, the siting and design of buildings shall retain that vegetation." Floodplains and associated wetland areas are generally significant and sensitive areas, and disturbing them unnecessarily would run contrary to this code.
- MCC 3.8.23(C) states "Site grading shall follow the natural terrain of the land and be the minimum necessary for development of the site as determined by the Administrator and Public Works." As determined in the Variance application on the subject property, there is approximately 6,400 square feet of developable land on the property without impacting the floodplain.

Please let me know if you have any questions.

Thank you,

Brian Parker, AICP | City Planner
216 E. Park Street | McCall | Idaho 83638
Direct: 208.634.4256 | Fax: 208.634.3038

City of McCall
Web: mccall.id.us
Blog: mccallcitysource.com
Social: Facebook.com/cityofmccall

From: Steve Millemann <sjm@mpmplaw.com>
Sent: Thursday, July 21, 2022 10:35 AM
To: Brian Parker <bparker@mccall.id.us>
Cc: James Fronk <jamesfronkconsulting@gmail.com>; Morgan Stroud <mstroud@mccall.id.us>; Nathan Stewart <nstewart@mccall.id.us>
Subject: RE: River's Crossing Lot 19 Block 2 - CLOMR Request

That works for me.
Thanks,

Steven J. Millemann
Millemann Pemberton & Holm LLP
P. O. Box 1066
706 N. 1st Street
McCall, ID 83638
Office: (208) 634-7641
Fax: (208) 634-4516

From: Brian Parker <bparker@mccall.id.us>
Sent: Thursday, July 21, 2022 10:10 AM
To: Steve Millemann <sjm@mpmplaw.com>
Cc: James Fronk <jamesfronkconsulting@gmail.com>; Morgan Stroud <mstroud@mccall.id.us>; Nathan Stewart <nstewart@mccall.id.us>
Subject: RE: River's Crossing Lot 19 Block 2 - CLOMR Request

How does Tuesday at 1:00 sound?

Brian Parker, AICP | City Planner
216 E. Park Street | McCall | Idaho 83638
Direct: 208.634.4256 | Fax: 208.634.3038

City of McCall
Web: mccall.id.us
Blog: mccallcitysource.com
Social: Facebook.com/cityofmccall

Please click to sign up for CodeRED!

From: Steve Millemann <sjm@mpmplaw.com>
Sent: Thursday, July 21, 2022 10:08 AM
To: Brian Parker <bparker@mccall.id.us>
Cc: James Fronk <jamesfronkconsulting@gmail.com>
Subject: RE: River's Crossing Lot 19 Block 2 - CLOMR Request

Hi, Brian.
Jim Fronk and I would like to meet with you about the below request. There have been some changes in the owners' plans that may be relevant to your evaluation of the pending CLOMAR/LOMAR Application that I would like to review with you. I think it would also be helpful to have Nathan Stewart participate. My schedule is open next Tuesday afternoon (7/26) and all day Wednesday (7/27).
Thanks,

Steven J. Millemann
Millemann Pemberton & Holm LLP
P. O. Box 1066
706 N. 1st Street
McCall, ID 83638
Office: (208) 634-7641
Fax: (208) 634-4516

From: Brian Parker <bparker@mccall.id.us>
Sent: Friday, May 27, 2022 8:28 AM
To: rmanning@forsgren.com
Cc: jamesfronkconsulting@gmail.com; Steve Millemann <sjm@mpmplaw.com>
Subject: River's Crossing Lot 19 Block 2 - CLOMR Request

Ron,

I have received the CLOMR application, Community Acknowledgement Form, and supporting documents for 221 Morgan Drive (Lot 19, Block 2, River's Crossing Subdivision). As this application violates McCall City Code, and the variance request to allow for work within the ASFH and 50' buffer was denied, I cannot sign the Community Acknowledgement Form.

Thank you,

Brian Parker, AICP | City Planner
216 E. Park Street | McCall | Idaho 83638

Direct: 208.634.4256 | Fax: 208.634.3038

City of McCall

Web: mccall.id.us
Blog: mccallcitysource.com
Social: Facebook.com/cityofmccall

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MILLEMANN PEMBERTON & HOLM LLP
ATTORNEYS AT LAW
Mailing Address: P.O. Box 1066, McCall, ID 83638
Physical Address: 706 North First St., McCall, ID 83638

STEVEN J. MILLEMANN
EMAIL: sjm@mpmplaw.com

TELEPHONE (208) 634-7641
FACSIMILE (208) 634-4516

September 2, 2022

Brian Parker, AICP
City Planner
City of McCall
216 E. Park Street
McCall, ID 83638

Re: River's Crossing Lot 19, Block 2-CLOMR Request

Dear Brian:

I am writing to respond to your e-mail of August 18, 2022 regarding the above-referenced CLOMR Request. Although I fear your position expressed in the e-mail is being driven by a political agenda, rather than the facts and McCall City Code provisions, I nonetheless want to be sure that we are all working with the accurate facts and applicable Code provisions regarding the CLOMR request.

First, the facts;

1. The pending CLOMR Application has nothing to do with the Variance request which was filed at the suggestion of the McCall Community Development Director made at an on-site meeting. As we all know, the application was denied by the City Council. That denial has not been appealed and the home contemplated by that request will not be built, Further variances from the Shoreline and River Environs setback will not be sought by the Sanders, despite the absurdity of its application to the Sanders' Lot.
2. The CLOMR Application with FEMA proposes a very minor revision of the FEMA Map after the placement of a small amount of fill. The Map revision would of course have to be approved by FEMA. It would not enable the home which was proposed by the Sanders to be built. It would adjust the SFHA boundary slightly to be consistent with adjoining properties and would provide a more reasonable basis to build a home in compliance with the Existing Shoreline and River Environs Setback.
3. The LOMR, if issued, would not relieve the property owner of the obligation to comply with any Code provisions applicable to the construction of a home, including Design Review and Shoreline and River Environs Review, including the setback provisions of the Shoreline and River Environs Overlay Zone.
4. The Community Acknowledgement Form which you have thus far declined to sign simply certifies that you have received the Application and that the project "meets or is

designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed *in the regulatory floodway*."

5. The subject Lot is 5.29 acres and contains 2.7 acres of delineated wetlands.
6. The Owners hold a 404 Permit from the Army Corps of Engineers to place fill in a .15 acre area, thereby impacting only 5.5% of the delineated wetlands and 2.8% of the Lot. The Permit is a "Nationwide Permit" which permits authorize "only activities with no more than minimal individual and cumulative adverse environmental effects." (See Army Corps of Engineers September 15, 2020 Proposal to Reissue and Modify Nationwide Permits).
7. LOMR's to adjust the floodplain boundaries are specifically contemplated by Title IX, Chapter 8 of the Code. As I know you are aware, one of your duties under Title IX, Chapter 8 is to work with owners on CLOMR requests.

After initially indicating that the project could proceed with a building permit and an administrative design review approval, and after conferring with others, you now cite three Code Sections which you believe would prevent you from issuing an Administrative Design Review Approval for the fill. As to MCC 3.7.023(1)(3)(c) it would be very difficult to reasonably justify a finding that the filling of 5.5% of the delineated wetlands on the property or an area equal to less than 3% of the Lot is "excessive". We are not dealing with the siting of buildings, to which MCC 3.8.13(4) refers. I assume that your third citation intended to be to MCC 3.8.23(D) rather than (C). Any grading associated with the placement of fill will follow the pre-existing natural terrain. Thus, I don't think that any of the three Code Sections would reasonably prevent the issuance of an Administrative Design Review approval if, once again, we are actually addressing the undisputed facts rather than the politics. However, I believe this discussion is moot, because no design review is required under the Code for this project.

MCC 3.7.023(A) requires design review "for all development, including all single family residences and accessory buildings *as provided for in Chapter 16 of this title.*" MCC 3.16.01(8) specifically references MCC 3.7.023 and requires design review of "*any structure* which is visible from specified water bodies or within the Shoreline and River Environs Overlay Zone." The proposed fill is clearly not a "structure" as defined in MCC 3.2.02. Thus, design review is not required for this project. This conclusion is further supported by the language of MCC 3.7.022(C), which provides that "[A]ny *structure*, wholly or partially within this zone, which may be visible from the water bodies, and any part of which is within the one hundred fifty foot (150') land strip as specified in section 3.7.021 of this chapter, is subject to design review and approval under chapter 16, "Design Review", of this title, notwithstanding that portions of the structure are not on land that is within this zone."

So, what other permits or approvals, if any, might be required under the Code for this project? Building Permits are required only for the "construction, improvement, extension, alteration or demolition of any *building, residence or structure.*" (MCC 2-1-040). It is, therefore, clear that no Building Permit is required for this project. Shoreline and River Environs approval is required for land filling *within a floodway*, as that term is defined in Title IX, Chapter 8 (MCC 3.7.022(B)). No fill is being proposed in the floodway. This project, therefore, does not fall under the purview of or require a permit under the Shoreline and River Environs Overlay Zone.

The permit which I believe is required for this project is a Floodplain Development Permit, under Title IX, Chapter 8 of the Code (MCC 9.8 .043(A)(1)), which requires that the Sanders present you with an application for a Floodplain Development Permit prior to any "development activities". The definition of "Development Activity" in MCC 9.8.02 includes the "deposition or extraction of materials". The Sanders are prepared to submit that Application and I am confident that they are entitled to receive a Permit for this project under the terms of Title IX, Chapter 8.

It is, thus, my conclusion that the only permit which is required under the Code for this minor placement of fill is a Floodplain Development Permit. We will be submitting that Application to you in the near future. If your or your team's conclusion as to the permitting requirements differs from mine, then I would ask that you and your team support your position with a written opinion from the City attorney. The Sanders are fully prepared to litigate this issue; and, if the City Attorney's opinion differs from mine, I would certainly want to carefully review it.

The City Council certainly had the legal discretion to ignore the Planning and Zoning Commission's recommendation on the variance application and the members of your team who were involved at the time also certainly had the right to remain silent throughout that process. However, the CLOMR application and the Community Acknowledgement to FEMA are simple and straightforward; and, as you have demonstrated to be your practice as City Planner, the Code should be impartially and fairly applied to both.

I look forward to submitting the Floodplain Development Application and moving forward with the CLOMR process.

Best regards,

Steven J. Millemann

cc. Annette Spickard

City of McCall

Floodplain Development Permit Application for the City of McCall

OFFICE USE ONLY
Date Received:
Land Use
App Number:

SECTION I: Applicant and Project Information

GENERAL INFORMATION

1. No work of any kind may begin in a floodplain until a floodplain development permit is issued.
2. The permit may be revoked if any false statements are made in this application.
3. If revoked, all work must cease until a permit is re-issued.
4. The development may not be used or occupied until a Certificate of Compliance is issued.
5. The permit will expire if no work is commenced within 6 months of the date of issue.
6. The permit will not be issued until any other necessary local, state or federal permits have been obtained.

By signing and submitting this application, the Applicant gives consent to the local Floodplain Administrator or his/her representative to make reasonable inspections prior to the issuance of a Certificate of Compliance.

By signing and submitting this application, the Applicant certifies that all statements contained in SECTION I of the application, and in any additional attachments submitted by the Applicant, are true and accurate.

OWNER INFORMATION

Property Owner: Dwain and Cindy Sanders Mailing Address: c/o Steve Millemann, PO Box 1066,

Telephone Number: [redacted]

Email Address: sjm@mpmplaw.com

Signature of Property Owner: [redacted] Date: 1/23/23

APPLICANT INFORMATION

Applicant: __Same_____ Notes:

Telephone Number: _____

Fax Number: _____

Signature of Applicant: _Same

PROJECT INFORMATION

Project Address: ___221 Morgan Drive, MCCall, ID _

Subdivision: Rivers Crossing_____

Lot_19_____

Block:__2_____

Attach Legal Description to application.

PROJECT INFORMATION (continued)

Type of Structure: None proposed

- ☐ Residential (1 to 4 families)
- ☐ Residential (More than 4 families)
- ☐ Non-Residential
  - ○ Elevated
  - ○ Floodproofed (wet/dry)
- ☐ Combined Use (Residential and Non-Residential)
- ☐ Manufactured Home
- ☐ Located within a Manufactured Home Park
- ☐ Located outside a Manufactured Home Park

Type of Structural Activity: None proposed

- ☐ New Structure
- ☐ Addition to Existing Structure*
- ☐ Alteration of Existing Structure*
- ☐ Relocation of Existing Structure **
- ☐ Demolition of Existing Structure
- ☐ Replacement of Existing Structure

*** Substantial Improvement**
If the value of an addition or alteration to a structure equals or exceeds 50% of the value of the structure before the addition or alteration, the entire structure must be treated as new construction.

Substantial Improvement Evaluation:
Cost of Improvement (a): $ -

Market Value of the Building (b) : -

Percent of Value Change (a/b): _____ %
Disclaimer: Substantial Improvement Evaluation must be supported by project cost documentation and approved market evaluation. Attach supporting documentation.

**** Relocation or Replacement**
A relocated structure or a structure being replaced must be treated as new construction.

Other Development Activities (See attached Narrative)

- ☒ Excavation (not related to a structural development)
- ☐ Clearing
- ☒ Placement of Fill Material
- ☒ Grading
- ☐ Mining
- ☐ Drilling
- ☐ Dredging
- ☐ Watercourse alteration
- ☐ Drainage improvement (including culvert work)
- ☐ Individual water or sewer system (not included to a structural development listed above)
- ☐ Roadway or bridge construction
- ☐ Specify other development not listed above:

PROPERTY OWNER SIGNATURE

Applicant: Please note that this application is often subject to engineering and legal review for purpose of addressing compliance and conformance issues. The City of McCall contracts these services to private firms and/or staff with hourly rates approved by City Council. The cost of these professional floodplain permit reviews are passed on to the applicant. These fees are separate and in addition to other land use application and permit fees.

Please initial that you are aware of these additional fees _____

I cert [redacted] *contained in the application is true and accurate.*

Signature of Property Owner: _____ Date: 1/23/23

SECTION II: (To be completed by Floodplain Administrator)

FLOOD INFORMATION

1. The proposed development is located on FIRM map panel:_____ (number and suffix)
2. Effective date on the FIRM: _____
3. The proposed development is located in Zone _____ of the SFHA.
4. Is the proposed development located within the regulatory floodway: ☐ No ☐ Yes *(Attach Completed H&H Analysis for a No-Rise Certificate)*

Structural Development

For structures, the provisions of the flood ordinance specify that the lowest floor, including basement, crawlspace and utilities, be elevated to or above the flood protection elevation.

The Flood Protection Elevation for the proposed development is: _____

Base Flood Elevation: _____

Source of Base Flood Elevation: ☐ FIRM ☐ FIS or ☐ other: _____

The following documents are required:

- ☐ An Elevation Certificate *
- ☐ Site Plan (Showing location of SFHA and development)

The following documents may be required:

- ☐ Floodproofing Certificate * – required if floodproofing a non-residential structure
- ☐ A No-Rise Certificate * – if any of the proposed development is in a "regulatory floodway"
- ☐ An elevation study showing BFEs on developments/ subdivisions exceeding 50 lots or 5 acres in Zone A

** Certificates require completion by a Professional Land Surveyor or Registered Professional Engineer as indicated.*

SECTION III: (To be completed by Floodplain Administrator)

Permit Determination

I have determined that the proposed development:

☐ IS ☐ IS NOT (non-conformance described in separate document)

in conformance with the local Flood Damage Prevention Ordinance.

The Floodplain Development Permit:

☐ IS ☐ IS NOT (denials are described in separate document)

issued subject to any conditions attached to and made part of this permit.

_____ _____

Signature of Floodplain Administrator: Date:

SECTION IV: (To be completed by Floodplain Administrator)

Certificate of Compliance

Certificate of Compliance is issued and the development is found to be in compliance with all applicable ordinances.

_____ _____

Signature of Floodplain Administrator: Date:

This Certificate of Compliance indicates that structures may now be occupied, and non-structural developments may be utilized.

NARRATIVE IN SUPPORT OF

SANDERS FLOODPLAIN DEVELOPMENT APPLICATION

January 23, 2023

1. **Overview:**

The property which is the subject of this Application is Lot 19, Block 2 of the Rivers Crossing Subdivision (the "**Property**"). The Property is 5.29 acres, containing approximately 2.7 acres of delineated wetlands. The vast majority of the Property lies within the area designated by FEMA as the "Special Flood Hazard Area" (a.k.a. the "1% AEP inundation extent"). The project for which this application is filed involves the placement of fill in less than .5 acres of the portion of the Property which is located within the Special Flood Hazard Area.

The placement of the fill is a component of a "CLOMR" (Conditional Letter of Map Revision) Application which is pending with FEMA. These applications allow an owner to obtain a Floodplain map revision by raising the level of property to a level which removes it from the Special Flood Hazard Area. The CLOMR process is expressly recognized by the McCall City Code, at Section 9.8.042, A, 13.

The placement of the fill requires a Floodplain Development Permit under MCC 9.8 .043, because it is within the definition of a "Development Activity" under MCC 9.8.02. No other permits are required under the McCall City Code for the proposed placement of fill.

This Property was the subject of a variance application which was denied by the McCall City Council. That denial has not been appealed and further variances from the Shoreline and River Environs setback will not be sought by the Sanders. The placement of the minimal amount of fill for which the Floodplain Development Permit is sought will not allow the previously designed home to be built. It will modestly expand the buildable area on the Lot, without having any adverse environmental impacts, and allow for a re-designed home to comply with the 50 foot setback requirement of the Shoreline and River Environs Ordinance. It is believed that this is precisely the process which was followed on the lot immediately to the north of the Sanders Property.

2. **The Project**:

The activity for which the Permit is sought will be the placement of imported fill into .48 acres of the Property, of which .15 acres is delineated Shrub/Scrub wetlands. The area in which the fill will be placed is depicted in **Exhibit 1** (the "**Project Area**").

The Property Owners hold a Permit from the Army Corps of Engineers (issued pursuant to Section 404 of the Clean Water Act) to place fill in the .15 acre area, thereby impacting only 2.8% of the Lot and 5.5% of the delineated wetlands. The Permit is a "Nationwide Permit", which permits authorize "only activities with no more than minimal individual and cumulative adverse environmental effects." (See Army Corps of Engineers September 15, 2020 Proposal to Reissue and Modify Nationwide Permits).

The fill will raise the existing elevation of the Project Area to a minimum elevation matching the Base Flood Elevation (BFE) or higher. As the BFE within the Project Area varies, the proposed minimum fill elevation also varies as depicted in **Exhibits 2 and 3**. No fill will be placed within the designated Floodway. No fill will be placed in or will impact any existing watercourse. Erosion control methods will consist of installation of silt fencing around disturbed areas. The small amount of fill contemplated by this Application and the CLOMR Application will result in only a slight rise in the project area (<0.1-ft during the 100-yr flood event). The proposed inundation boundaries were computed in the hydraulic analysis documented in the CLOMR and compared to existing and found no significant difference in floodplain delineations within the project area or any upstream or downstream properties. The Application does not propose the placement or construction of any structures.

3. **The Floodplain Development Application Requirements** (M.C.C. 9.8.043):

The following are the Application requirements of the Ordinance (MCC 9.8 .043(A)(1)):

(a) A plot plan drawn to scale which shall include, but shall not be limited to, the following specific details of the proposed floodplain development:

(1) The nature, location, dimensions, and elevations of the area of development/disturbance; existing and proposed structures, utility systems, grading/pavement areas, fill materials, storage areas, drainage facilities, and other development.

Compliance: See Plot Plan attached hereto as Exhibit 1. There are no existing or proposed structures utility systems, or pavement contemplated by the Application.

(2) The boundary of the special flood hazard area as delineated on the FIRM or other flood map as determined in section 9.8.032 of this chapter, or a statement that the entire lot is within the special flood hazard area.

Compliance: See attached Exhibit 1.

(3) The flood zone(s) designation of the proposed development area as determined on the FIRM or other flood map as determined in section 9.8.032 of this chapter.

Compliance: The current flood zone designation for the Project Area is "1% AEP (100 yr) SFHA"" (see Exhibit 1).

(4) The boundary of the floodway(s) as determined in section 9.8.032 of this chapter,

Compliance: See Exhibit 1. The Project Area is not within or proximate to the Payette River Floodway.

(5) The base flood elevation (BFE) where provided as set forth in section 9.8.032, 9.8.033, or 9.8.053 of this chapter.

Compliance: See Exhibit 1.

(6) The old and new location of any watercourse that will be altered or relocated as a result of proposed development.

Compliance: The proposed activity will not alter, relocate or impact any existing watercourse.

(b) Proposed elevation, and method thereof, of all development within a special flood hazard area including but not limited to:

(1) Elevation in relation to mean sea level of the proposed lowest floor (including basement) of all structures.

Compliance: NA. No structures are proposed as part of this Application.

(2) Elevation in relation to mean sea level to which any non- residential structure in Zone A, AE, AH, AO, or A1-30 will be floodproofed.

Compliance: NA. No structures are proposed as part of this Application.

(3) Elevation in relation to mean sea level to which any proposed utility equipment and machinery will be elevated or floodproofed.

Compliance: NA. No such equipment is proposed as part of this Application.

(c) If floodproofing, a Floodproofing Certificate (FEMA Form 086-0-33) with supporting data, an operational plan, and an inspection and maintenance plan that include, but are not limited to, installation, exercise, and maintenance of floodproofing measures will be required prior to Certificate of Occupancy/Completion.

Compliance: NA

(d) Foundation Plan, drawn to scale, which shall include details of the proposed foundation system to ensure all provisions of this chapter are met.

Compliance: NA

4. **General Standards, to the extent applicable to the proposed activity (MCC 9.8.051(A)):**

15. All subdivision proposals and other development proposals shall have received all necessary permits from those governmental agencies for which approval is required by Federal or State law, including section 404 of the Federal Water Pollution Control Act Amendments of 1972, 33 USC 1334.

Compliance: The Applicants hold a Permit from the Army Corps of Engineers for the proposed activity.

5. **Specific Standards (MCC 9.8.052)**: There are no Specific Standards applicable to this Application.

EXHIBIT 1

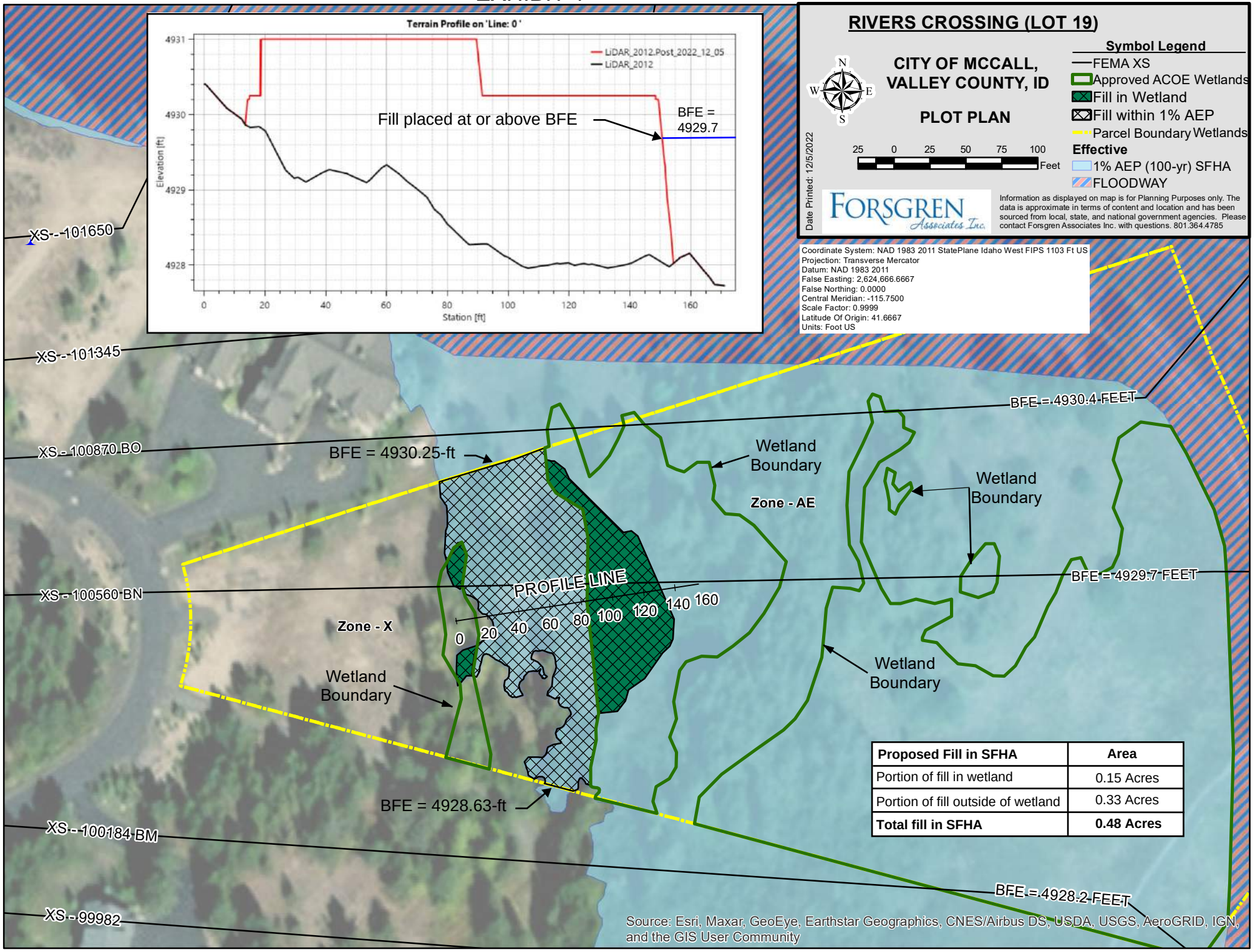
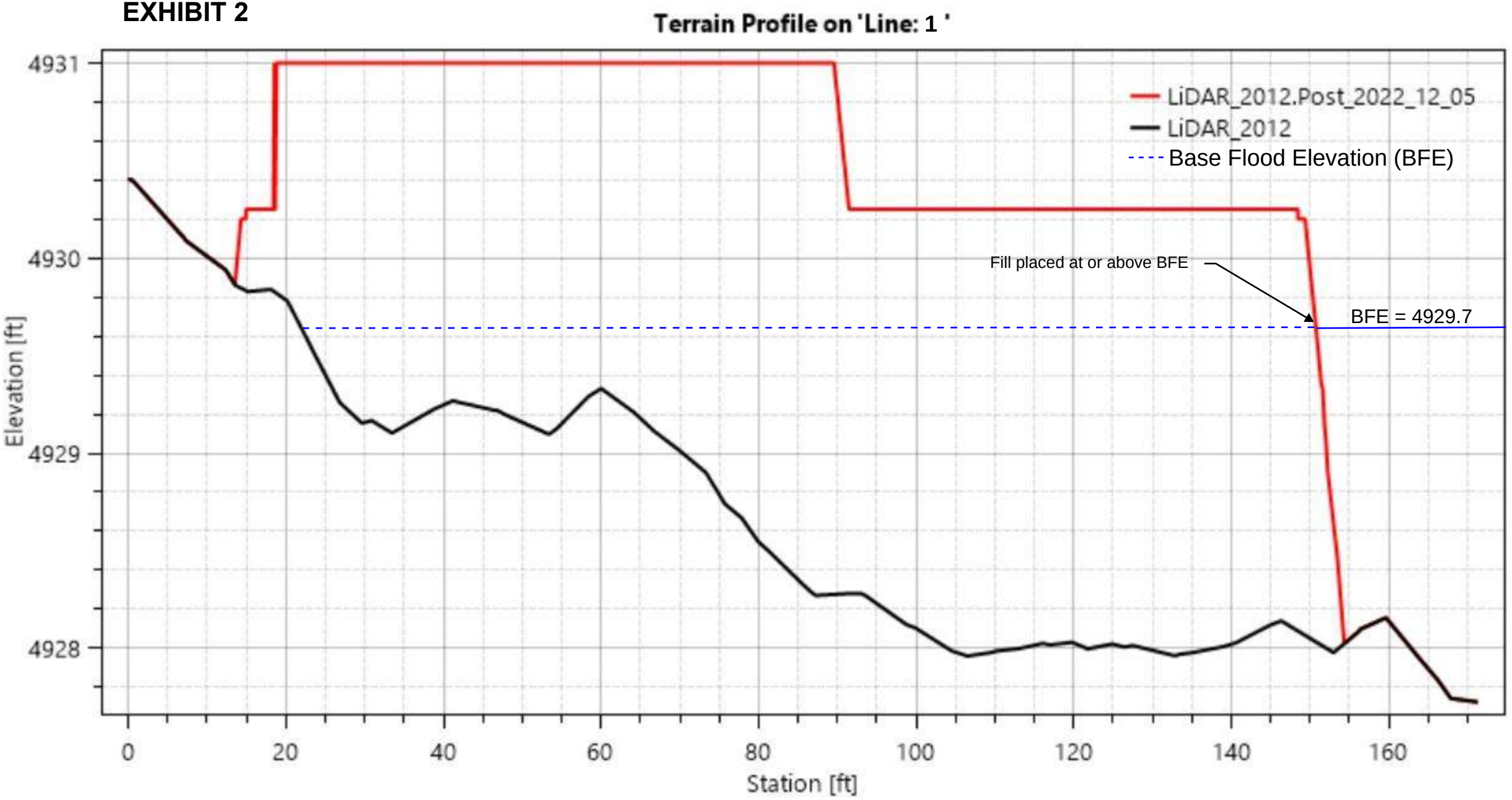

RIVERS CROSSING (LOT 19)
CITY OF MCCALL, VALLEY COUNTY, ID
PLOT PLAN
Date Printed: 12/5/2022
25 0 25 50 75 100
Feet
Symbol Legend
FEMA XS
Approved ACOE Wetlands
Fill in Wetland
Fill within 1% AEP
Parcel Boundary Wetlands
Effective
1% AEP (100-yr) SFHA
FLOODWAY
FORSGREN Associates Inc.
Information as displayed on map is for Planning Purposes only. The data is approximate in terms of content and location and has been sourced from local, state, and national government agencies. Please contact Forsgren Associates Inc. with questions. 801.364.4785
Coordinate System: NAD 1983 2011 StatePlane Idaho West FIPS 1103 Ft US
Projection: Transverse Mercator
Datum: NAD 1983 2011
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US
Terrain Profile on 'Line: 0'
LiDAR_2012.Post_2022_12_05
LiDAR_2012
Fill placed at or above BFE
BFE = 4929.7
Elevation [ft]
Station [ft]
XS - 101650
XS - 101345
XS - 100870 BO
XS - 100560 BN
XS - 100184 BM
XS - 99982
BFE = 4930.4 FEET
BFE = 4930.25-ft
BFE = 4929.7 FEET
BFE = 4928.63-ft
BFE = 4928.2 FEET
Wetland Boundary
Zone - AE
Zone - X
PROFILE LINE
0 20 40 60 80 100 120 140 160
Proposed Fill in SFHA | Area
Portion of fill in wetland | 0.15 Acres
Portion of fill outside of wetland | 0.33 Acres
Total fill in SFHA | 0.48 Acres
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

EXHIBIT 2


Terrain Profile on 'Line: 1 '
LiDAR_2012.Post_2022_12_05
LiDAR_2012
Base Flood Elevation (BFE)
Fill placed at or above BFE
BFE = 4929.7
Elevation [ft]
4931
4930
4929
4928
0
20
40
60
80
100
120
140
160
Station [ft]

1 BUILDING SITE CONSTRAINTS
SCALE: 1" = 40'

0 20' 40' 80'

THIS IS INTENDED TO BE PRINTED ON A 24"X36" SHEET. ALL OTHER SHEET SIZES WILL NOT BE PRINTED TO SCALE.

BIMdoud: s132-148-167-156 - BIMdoud Basic for ARCHICAD 23/SANDERS RIVER CROSSING

EPIKOS
LAND PLANNING
+
ARCHITECTURE

McCALL OFFICE
303 Colorado Street
P.O.Box 2490
McCall, Idaho 83638
Tel: 208.634.4540

www.EpikosDesign.com

SANDERS RESIDENCE

221 MORGAN DRIVE
MCCALL, ID 83638

Stamp:
P&Z APPLICATION SET

Revisions:
(PLOT DATE: 8/31/2020)

Date: 8/31/2020
Project No: 1916
Drawn by: LB, ES
Checked by: LB

Title:
P&Z SITE FEATURES

Sheet:
A2-3

City of McCall
COMMUNITY DEVELOPMENT

www.mccall.id.us

216 East Park Street
McCall, Idaho 83638

Phone 208-634-7052
Main 208-634-7142
Fax 208-634-3038

Dwain and Cindy Sanders
C/O Steven J. Millemann
P.O. Box 1066
McCall, ID 83638

Re: FPDP-23-01 – Floodplain Development Permit Application for River's Crossing Lot 19 Block 2 dated January 23, 2023

Dear Mr. and Mrs. Sanders:

Determination of Floodplain Administrator pursuant to McCall City Code: **Application Denied**

Basis for Determination, Findings of Fact and Conclusions of Law:

I. Applicable Code:

1. Floodplain Development Permit Applications are reviewed by the Floodplain Administrator. MCC 9.8.042.
2. The City Planner is designated as the Floodplain Administrator. 9.8.041.
3. According to MCC 9.8.034, no land within the Floodplain can be altered or developed "in any way without full compliance with the terms of this chapter and other applicable regulations."
4. Title 9 Chapter 8 is not intended in any way to "repeal, abrogate, impair, or remove the necessity of compliance with any other laws, ordinances, regulations, easements, covenants, or deed restrictions, etcetera. However, where this chapter and another conflict or overlap, whichever imposes more stringent or greater restrictions shall control." MCC 9.8.035
5. No land may be altered within the floodplain without being in compliance "in full compliance with the terms of this chapter and other applicable regulations." MCC 9.8.038.
6. MCC 3.2.02 provides the following definitions:
   - **a.** Development: Any construction or activity that changes the existing character or use of land upon which such construction or activity occurs.
   - **b.** Excavation: See chapter 70 of the international building code.
     - i. "Excavation is the mechanical removal of earth material." - 2018 IBC 7003
   - **c.** Record Grade: The natural grade existing prior to any site preparation grading, or filling, unless a new record grade is approved at the time of subdivision approval and noted on the filed final plat.
   - **d.** Wetlands: Lands which are dedicated and protected in accordance with Federal laws and are not to be included in the calculation of land to meet the requirements for parks.
7. MCC 3.7.023(B): Permit Criteria: No conditional use or building permit shall be issued, nor is any development, grading, or alteration of any land within this zone permitted, unless the applicant establishes to the satisfaction of the commission and council in the case of a conditional use, or of the administrator in the case of a building permit, that:
   1. The proposed development meets all applicable requirements of this title and title IX of this code.

2. The plans accurately identify the water pool shore contours and high water marks, which, in the case of river environs, shall mean the limits of the area of special flood hazard.
3. A letter is on file from a specialist certified by the United States army corps of engineers wetlands expert that certifies that no wetlands related issues or issues related to fill of navigable waters issues were presented by the proposed development; or that a section 404 permit has been issued or is forthcoming by the corps of engineers, whichever is appropriate, city approval(s) under this title and title IX of this code are contingent upon all applicable section 404 permit requirements being met; if a permit requirement is not met, the city may revoke its approval(s) under this title and title IX of this code.
4. The requirements of the underlying zone are met.
5. The fifty foot (50') building setback line is met per subsection (C)3(c) of this section.
6. Proof of stormwater certification training has been provided by the individual applying for the building permit.

8. According to MCC 3.7.023 (C) Prohibitions: No construction, alteration or activity shall cause harm to:
   a. Water quality.
   b. Fish and aquatic habitats.
   c. Wetlands.
   d. Significant wildlife habitat harboring any threatened or endangered species.
   e. Views of, from, or across a lake or river.
   f. To this end, all applications for building permits within this overlay zone, no matter what the permit may be for, shall be accompanied by a plan for the installation of appropriate natural, storm, and melt water drainage and treatment facilities. Such plans for natural, storm and melt water drainage of the property and on and through the property, shall be consistent with best management practices under state and federal storm and melt water regulatory programs to which the city is subject and consistent with other city programs in these regards to the satisfaction of the city.
   2. Harm Defined: "Harm" for these purposes means:
      a. The creation of conditions which foster runoff of, or other source of fertilizers, toxic substances, or other pollutants or contaminants, into the water;
      b. The excessive clearing of natural vegetation or change of natural landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line;
      c. The removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge;
      d. The filling or dredging of lake bottom or wetlands;
      e. The erection of visual barriers between the lake or river and the roads on the uplands, beyond the extent reasonably necessary for an owner's usage of the land for a permitted use; or
      f. The creation of any other condition which would be inconsistent with best management practices under, or threaten a violation of, state and federal storm and melt water regulatory programs to which the city is subject, or fail otherwise to be consistent with other city programs in these regards, all as established to the satisfaction of the city.
9. Pursuant to MCC 3.8.02(G): Building Permit Required: Until a valid building permit has been issued by the city of McCall, no construction work, including grading, blasting, filling, trenching, tree removal, etc., may be started, except as permitted in section 3.8.03 of this chapter.
10. Pursuant to MCC 3.8.23(B): Structures shall be located in a manner that preserves significant vegetation as set forth in section 3.8.13, as well as water courses, wildlife corridors, wetlands, and significant natural features. Projects should be designed so they complement rather than

dominate the natural landscape. To meet this performance standard all structures should be located:

1. In one of three (3) locations: (a) within tree masses; (b) at the edge of tree or land masses overlooking open space; or (c) in such a way as to preserve the predominate natural features of the site; and
2. At least fifteen feet (15') from any wetland, stream or watercourse.

11. Pursuant to MCC 3.8.23(D) Site grading shall follow the natural terrain of the land and be the minimum necessary for development of the site as determined by the Administrator and Public Works Director.

II. Discussion:

A. The provisions of McCall City Code Title 3 are applicable to Floodplain Development Permits.

A condition for the approval of any Floodplain Development Permit (FDP) is that all proposed Development must meet all applicable Laws, Ordinances, Regulations and Standards. The provisions of Title 9 authorizing FDP's specifically subordinates and subjugates such permits to other applicable standards within the McCall City Code. In that way, a FDP is not a means by which an applicant may avoid the development standards and requirements provided in Title 3 of the McCall City Code.

B. There are three basis found in Title 3 for the denial of the Sanders FDP:

1. No building permit has been issued.

MCC 9.8.042(A)(2) requires that all necessary local, State, and Federal permits have been received. As MCC3.8.02(G) requires a building permit prior to grading or filling. No building permit has been issued for this project and therefore, not all necessary local permits have been received.

2. The proposed Development will cause unpermitted harm.

MCC 3.7.023 prohibits development which will cause harm to:

a. Water quality.
b. Fish and aquatic habitats.
c. Wetlands.
d. Significant wildlife habitat harboring any threatened or endangered species.

The application materials provided to date do not provide adequate evidence that the risk of harm has been minimized.

a. The proposed FDP may result in impermissible runoff

Modifications to the floodplain area for residential development may result in impermissible runoff from the use of fertilizers on lawn areas, excessive silt creation and hazardous materials being introduced to the Payette River during construction. As no building permit application, construction plan, or stormwater management plan has been submitted to date, inadequate evidence exists to determine that the proposed floodplain modification will not result in the creation of impermissible runoff.

b. The Proposed FDP will result in excessive clearing of natural vegetation or change of natural landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line

The proposed floodplain development permit will cause excessive clearing of natural vegetation and likewise represents an excessive change to natural land forms within the area between the river shore and the high water mark. The proposed development is excessive because the property in question includes an area that is large enough to support development without requiring excess and additional modification to the floodplain environment. Thus, the proposed Development on the site is in excess of what is required to develop the site in a way that is otherwise consistent with regulations under McCall City Code.

c. The proposed floodplain development permit will result in the removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge.

The proposed floodplain development permit will result in the removal burial and destruction of features of the high-water mark (defined by MCC 3.7.023(B)(2) to be the area of special flood hazard along river environs), the land below the same and the immediate upland edge. The proposed floodplain development permit clearly proposes destruction of the existing high water mark land contour, filling and burial of areas below the high-water mark, and extension of the upland edge to a location not previously found on site.

d. The Proposed floodplain development permit will result in the filling or dredging of lake bottom or wetlands

The proposed floodplain development permit specifically and unequivocally prescribes and includes the filling of wetlands. Exhibit 1 of the floodplain development permit application clearly identifies Army Corps of Engineers delineated wetlands proposed to be filled.

3. The proposed site grading is in excess of the "minimum necessary for development of the site as determined by the Administrator and Public Works.

As no building permit application or Shoreline and River Environs Design Review application has been submitted to date, any site grading is in excess of the minimum necessary for development of the site.

III. Conclusion.

Based upon the foregoing, it is my determination that the Sanders application for FDP is denied because it proposes site work and grading not permissible under the above referenced sections of McCall City Code.

IV. Availability of Appeal of this Determination

Pursuant to MCC 9.9.07, this determination may be appealed according to the provision of Title III, Chapter 15 of the McCall City Code as follows:

3.15.09: ADMINISTRATIVE APPEALS:

(A) A person aggrieved by a decision by the administrator under this title may appeal such decision to the commission.

(B) Appeals shall be filed within ten (10) days after mailing of notice of decision by the administrator.

(C) Appeals shall be conducted as a public hearing before the commission in the manner set forth in subsections 3.15.04 and 3.15.08 of this chapter. (Ord. 821, 2-23-2006, eff. 3-16-2006; amd. Ord. 998, 1-14-2021)

3.15.08: APPEAL OR REQUEST FOR HEARING BY AGGRIEVED PERSONS:

(A) Right To Appeal: An aggrieved person may appeal the commission decision, or request a hearing on the commission recommendation, by filing a notice of appeal or request for hearing in writing with the city clerk no later than ten (10) days after the issuance of the findings and conclusions of the commission. When such notice of appeal or request is received, proceedings before the council shall be on the record made below. A notice of appeal shall set out with particularity the decision or part thereof from which the appeal is being taken, and whether or not facts found by the commission are disputed by appellant.

(B) Time Limits For Actions: The council shall hold a public hearing on the appeal and the application appealed within forty five (45) days of the request and shall follow the hearing procedures established in section 3.15.04 of this chapter. When there is no required hearing, the council shall put the matter down on its agenda upon a date certain for the consideration of written and oral arguments; notice of such hearing shall be provided to appellant no later than fifteen (15) days before the hearing; should appellant desire to file written arguments, appellant shall do so no later than five (5) days prior to the hearing.

(C) Stay Of Proceedings: An appeal or request for hearing stays all proceedings in furtherance of the action appealed from unless, after the notice of appeal or request for hearing is filed, the council finds that by reason of the facts stated in the application, a stay would cause imminent peril to health, safety or property.

(D) Council Action: After the hearing has been held, the council may:

1. Grant or deny the appeal or the permit; or
2. Delay such decision for no longer than sixty (60) days after the hearing date for further study or hearing; provided, however, that the council must render a decision no later than sixty (60) days from the date of the hearing. (Ord. 821, 2-23-2006, eff. 3-16-2006)

3.15.10: JUDICIAL REVIEW:

A person aggrieved by a decision under this title may, after all remedies have been exhausted under local ordinances, seek judicial review under the procedures provided by sections 67-5215(b) through (g) and section 67-5216, Idaho Code. (Ord. 821, 2-23-2006, eff. 3-16-2006)

MILLEMANN PEMBERTON & HOLM LLP
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TELEPHONE (208) 634-7641
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NOTICE OF APPEAL

April 10, 2023

City of McCall
Brian Parker
Planning & Zoning Commission
216 East Park Street
McCall, Idaho 83638

Re: Appeal of FPDP-23-01 Floodplain Development Permit Application for River's Crossing Lot 19 Block 2, Application filed January 23, 2023, Administrative Denial emailed March 31, 2023

Dear Mr. Brian Parker and Planning & Zoning Commission:

On behalf of our clients Dwain and Cindy Sanders, this letter shall serve as an appeal of the Determination of the Floodplain Administrator's denial of the Floodplain Development Permit Application for River's Crossing Lot 19 Block 2, which is referred to herein as "Administrative Denial." Pursuant to McCall City Code, this appeal is filed 10 days after the mailing of the Administrative Denial. The Sanders request that a public hearing be set before the McCall Planning and Zoning Commission for this to be heard on June 6, 2023, or thereafter, based on the availability of the Sanders' counsel. The Sanders respectfully request that the McCall Planning and Zoning Commission enter findings and conclusions granting the Sanders' Floodplain Development Permit Application and which findings and conclusions reverse the Administrative Denial.

I. Identification of the Sanders' Property and background

Dwain and Cindy Sanders own a vacant lot, Lot 19 in Rivers Crossing Subdivision, which is approximately 5.3 acres (referred to as "Property"). The Property abuts the Payette River. At the time the Sanders submitted the Floodplain Development Permit Application, they held a 404 Permit issued by the Army Corps of Engineers under the Clean Water Act to fill .15 acres of wetlands located within the Shoreline and River Environs Zone. That permit will be extended by the Army Corps of Engineers and the record will reflect such as this appeal is decided.

The January 23, 2023, Floodplain Development Permit Application is based on the request to fill a total of .48 acres of a portion of the Property including the .15 acres in wetland in the Special Flood Hazard Area ("SFHA") and .33 acres outside of the wetland. The use of the fill is part of the "CLOMR" (Condition Letter of Map Revision) Application that the Sanders have applied for with FEMA. Simply, by raising the level of the Property, the Property can be removed from the Special Flood Hazard Area. This process is allowed under McCall City Code.

The Sanders applied for a Floodplain Development Permit, which under MCC 9.8.033, "shall be required in conformance with the provisions of this chapter prior to the commence of any development activities within the special flood hazard areas."

The Sanders, or any future owner in interest, would still be required to comply with McCall City building standards, setbacks, and ultimately any placement or construction of a home on this Property. If the Sanders are allowed to proceed with the fill process, any potential home in the future, must comply with a 50 feet Shoreline and River Environs setback and would be located approximately 400 feet from the Little Payette River.

II. Legal Issues on Appeal and response to Administrator's basis for denial

The Sanders respectfully disagree with the City Administrator's denial of the Sanders' Application and the evidence on appeal will show that the site work and grading necessary for the fill process are permitted under McCall City Code.

The Sanders are NOT proposing to install fill within the "floodway", but they are proposing to install fill within a small portion of the special flood hazard area. MCC 3.7.022 provides that all those uses permitted in the underlying zone shall be permitted provided they satisfy the special conditions set forth in this chapter, except that (B) "No building and no land filling shall be permitted within a floodway and no building within an area of special flood hazard as such terms are defined in title IX, chapter 8, "Flood Control Regulations (Overlay)", of this code, unless the applicant complies with the standards set forth in that chapter."

As defined in MCC 9.8.02:

> FLOODWAY: The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.
>
> . . . .
>
> SPECIAL FLOOD HAZARD AREA (SFHA): The land in the floodplain within a community subject to a one percent (1%) or greater chance of flooding in any given year. For purposes of these regulations, the term "special flood hazard area" is synonymous in meaning with the phrase "area of special flood hazard".

The Sanders' Application is subject to the considerations of Title IX, Chapter 8 only, and is not subject to the provisions of the Shoreline & River Environs Ordinance under MCC 3.2.020 as set forth in the record on appeal. However, even if the Shoreline & River Environs Ordinance does apply, the Sanders can meet the standards of development for this fill project.

1. No building permit is required for fill, but in an abundance of caution, the Sanders will simultaneously apply for a building permit.

Currently, the Sanders are not requesting a permit to "build" a home or any kind of structure; instead, they seek approval to fill a portion of the Property with soil to raise the

elevation of such Property. The applicable sections of McCall City Code regarding development in the Shoreline & River Environs Ordinance can be found in MCC 3.2.020.

The Code section 3.2.023 when read in whole requires Shoreline & River Environs design review for single family residences/structures. MCC 3.7.023(A). It requires a CUP in certain circumstances. It requires a building permit to build. It does not clearly require a building permit to place fill. Therefore, the Floodplain Development Application is the appropriate and necessary process for the City's review of this matter.

The purpose of the Shoreline & River Environs Ordinance is "to regulate development along and alterations of the shoreline of Payette Lake and the banks and immediate vicinity of the Payette River." According to MCC 2-1-040 a building permit is required for any "construction, improvement, extension, alteration or demolition of any building, residence or structure." MCC 3.8.02(G) states that "Until a valid building permit has been issued by the City of McCall, no construction work, including grading, blasting, filling, trenching, tree removal, etc. may be started, except as permitted in section 3.8.03 [timber harvest] of this chapter."

It is the Sanders position that both code sections can be given their plain meaning and when read together require a building permit for construction of a building, residence or structure and that when such building permit is required no other ancillary work (e.g. grading, blasting, trenching) can start until such building permit is issued. But a request such as this to fill the property requires no such building permit – because no structure is being built.

This is <u>not</u> an issue which is resolved by MCC 3.1.05(B), which provides that "In case of a conflict between the provisions of various sections *of this title*, the more restrictive provisions shall prevail. (Ord. 821, 2-23-2006, eff. 3-16-2006)". The conflict here is not just within Title III, it also involves Title IX, Chapter 8 (Flood Control Regulations Overlay), which prohibits filling in the "Floodway", but clearly allows for the placement of fill within the SFHA pursuant to a validly issued 404 Permit (see, for example, MCC 9.8.051(A)(15)).

It is, thus, important to recognize that the reliance solely on MCC 3.7.023(C)(1) to resolve this issue would negate: (i) the aforesaid provisions of Title IX, Chapter 8; (ii) the provisions of MCC 3.7.023(B)(3), which allows for the issuance of building permits and conditional use permits impacting wetlands within the Shoreline Environs Zone provided that a 404 Permit has been issued; and (iii) MCC 3.7.022(B), which allows for both buildings and fill within the Shoreline Environs Zone.

The most logical way to reconcile the applicable code sections as they apply to this situation is that a building permit is required for fill if it is part of an application for a structure. The Sanders are required to apply for a Floodplain Development Permit to fill a portion of the Property, which is exactly what they have done. And then, they would be required to apply for a building permit when a home is built.

Whether a building permit is required becomes moot upon the Sanders application for a building permit to install the fill. However, the Sanders do not waive their right to argue that no building is required.

2. There will be no harm, and the Administrator provides no basis for the assertion that unpermitted harm would occur if the permit were granted.

The Sanders do not waive their argument that Shoreline & River Environs Ordinance does not apply, but they address the Administrative Denial on each point. MCC 3.7.023(C)(1) prohibits "harm" to the stated water, etc. However, (C)(1)(f) essentially requires that all "applications for building permits" address the "harm" issues. And, MCC 3.7.023(C)(2), on

which the City heavily relies, provides a definition of "harm", is for purposes of the prior section, rather than a standalone independent ordinance. Supporting this interpretation is MCC 3.7.023 (C)3a(3) (which requires an applicant for a building permit for a single family residence or accessory structure to demonstrate the absence of "harm", "as defined above"; and under (3)(b) such application is evaluated under the standards of (C)(1) and (C)(2).

The Administrative Denial of the Sanders' Application alleges harm would occur if the Sanders were allowed placement of fill; however, that position is not supported by any City report or actual factual findings. The Administrative Denial summarily states that harm will occur to water quality, fish and aquatic habitats, wetlands, and wildlife habitat harboring any threatened or endangered species. To the contrary, the Sanders care deeply about preserving the Little Payette River, water quality, habitats, and wetlands. The project, as proposed, would involve the placement of fill into .48 acres of the Property, which includes only .15 acres of shrub/scrub wetlands.

Importantly, all parties involved desire to prevent harm to the Little Payette River and any building of a structure will require approval, which will allow for all of the stated concerns (water quality, habitat, wetlands) to be addressed. So, the narrow issue for this Application is whether fill will cause harm, if those standards are even applicable.

The evidence on appeal will establish that no such harm will occur if the Floodplain Development Application were granted.

a. Any runoff can be safely mitigated.

The Administrative Denial asserts that impermissible runoff will occur and sites that residential development may result in impermissible runoff from the use of fertilizers on lawn areas, excessive silt created, and hazardous materials introduced into the Payette River during construction. The current Application to fill a small portion of the Property would clearly cause no pollution into the River, excessive silt, or any hazardous materials. Any of those concerns could be mitigated by the City upon application to actually build a structure, landscape, etc.

The Applicant will submit a stormwater management plan showing how runoff will be controlled both during and after placement of the fill to mitigate any concerns about runoff.

b. Natural vegetation can be preserved.

The Sanders received approval from the McCall City Arborist that clearing of "nuisance" shrubby and dead Aspen trees will benefit the remaining vegetation and foliage. However, the Administrative Denial summarily claims that the proposed installation of fill will cause excessive clearing of natural vegetation and represents an excessive change to natural landforms within the area between the river shore and the high water mark. The denial goes on to claim that the proposed development is excessive because there is an area "large enough" to support development without requiring excess and additional modification to the floodplain environment. The Administrative Denial, as written, does not rely on any engineering evidence.

c. The high water mark will be maintained.

The definition of "high water mark" pursuant to MCC 3.7.023(B)(2) as applied to this lot, is arbitrary, because it has no proximity to or impact on the Little Payette River. That code section provides "The plans accurately identify the water pool shore contours and high water marks, which, in the case of river environs, shall mean the limits of the area of special flood hazard."

The very purpose of the Shoreline & River Environs Ordinance is to regulate

development of the banks and immediate vicinity of the Payette River. The banks and immediate vicinity of the Payette River are not being developed with this fill application.

d. The majority of the wetlands will stay intact.

Even if the Shoreline & River Environs Ordinance is applicable, it does not prohibit fill in the wetland pursuant to valid 404 Permit which permitting process establishes a process for the wetland to stay intact. The Army Corps of Engineers has expressly allowed the fill in the .15 acres of wetlands.

3. The proposed site grading will comply with MCC and the minimum necessary for development of the Site.

The Administrative Denial states "as no building permit application or Shoreline and River Environs Design Review application as been submitted to date, any site grading is in excess of the minimum necessary for development of the sites." As stated herein, no building permit or design review is required because the Sanders are not currently proposing to construct any building, residence, or structure.

III. Conclusion

The Sanders ask that this matter be set for a public hearing on June 6, 2023 or thereafter, as their attorneys Steve Millemann and Amy Holm are unavailable on May 2, 2023. The Sanders believe that the record on appeal has and will establish that their Floodplain Development Permit should be granted, and they request that the Administrative Denial be reversed.

Sincerely,

Steven J. Millemann
Amy K. Holm
On Behalf of Dwain and Cindy Sanders

FORSGREN Associates Inc.

DATE: July 17, 2023

TO: James Fronk, James Fronk Consulting, LLC

FROM: Patrick Wickman, Forsgren Associates, Inc.

SUBJECT: River's Crossing Lot 19, Block 2 – Measures to Minimize Environmental Harm

---

1.0 PURPOSE

The owner of River's Crossing Lot 19, Block 2 in the City of McCall, Idaho proposes to develop its parcel and construct a new residence (RPM05380020190) (Lot 19). Forsgren Associates, Inc. (Forsgren) was contracted by James Fronk Consulting, LLC (Client) to assess the proposed development's potential to cause harm to the environmental resources identified in the City of McCall's denial of a Floodplain Development Permit Application.

McCall City Code (MCC) Section 3.7.023 prohibits development which will cause harm to:

(a) water quality;
(b) Fish and aquatic habitats;
(c) wetlands; and
(d) significant wildlife habitat harboring any threatened or endangered species.

Also of concern is the potential of site development under the Floodplain Development Permit (FDP) to result in impermissible runoff.

2.0 LOCATION

Lot 19 is located within the River's Crossing Subdivision at 221 Morgan Drive. The lot is bounded by the North Fork (NF) Payette River to its east. It is located on the inside of a meander of the NF Payette River. There are residential developments to the north, south, and west. The McCall RV Resort is located across the river and directly north of the parcel. Riverfront Park is located east of the river. Lot 19 is 5.29 acres. See Figure 1.

3.0 BACKGROUND RESEARCH

Threatened or Endangered Species. An Information for Planning and Consultation (IPaC) Report was requested from the U.S. Fish and Wildlife Service and an email request was made to the Idaho Department of Fish and Game (IDFG) for a review of their Species of Greatest Conservation Need (SGCN) (Attachment 1). These requests were made to determine potential species and habitat concerns for Lot 19.

The IPaC identified three (3) threatened, endangered, or candidate species (Table 1) that may be present in the project area. The IPaC also states that there are no critical habitats within the project area.

Fourteen (14) Birds of Conservation Concern (BCC) were identified in the IPaC (Attachment 3- Table 3). IDFG replied that while the agency does not conduct specific wildlife surveys on private property, they

provided records of nine (9) SGCN within 0.5 miles of Lot 19 (Attachment 3 – Table 4). Species listed within its database in the project vicinity are Tier 2 and Tier 3 SGCN. No Tier 1 species (the highest priority species) were identified.

Wetlands. Wetlands on the 5.29 acre parcel were delineated in 2020. The delineation identified a number of different wetland types totaling 2.7 acres. These included emergent wetlands (i.e., grasses and herbs), scrub-shrub wetlands (i.e., woody vegetation <6' high), and forested wetlands (i.e., trees >6' high). The highest value wetlands are the forested wetlands (aspens), which are located outside the area proposed for development. Proposed impacts are 0.15 acres and would affect a scrub-shrub wetland located away from the river (Attachment 4).

Water Quality. To assess water quality, the Idaho Department of Environmental Quality's (IDEQ) Final 2022 §305(b) Integrated Report for the reach of the North Fork Payette River from Payette Lake to Cascade Reservoir was accessed. This reach is contiguous to the subject property, but still approximately 220 feet from the proposed development.

This section of the river is fully supporting Primary Contact Recreation (i.e., swimming humans) and not supporting Cold Water Aquatic Life or Salmonid Spawning (Attachment 1). This classifies this reach as a Category 5 Water (i.e., a water that does not meet applicable water quality standards for one or more beneficial use). Therefore, under Idaho's Antidegradation Policy, the project must maintain and protect existing uses and water quality conditions.

Fish and Aquatic Habitat. The North Fork Payette River provides habitat for fish and other aquatic wildlife. During consultation with IDFG, the agency identified one Species of Greatest Conservation Need, the Western Pearlshell, an invertebrate (mussel).

As mentioned previously, the river is approximately 220 feet from the limits of proposed development. As such, the only potential for harm to the river would be attributed to runoff associated with site development.

4.0 FIELD RECONNAISSANCE

Field reconnaissance was performed on June 9, 2023, by Erica Koppes and Anna Weins from Forsgren. They were met on site by James Fronk (James Fronk Consulting) and Amy Holm (Owner's legal counsel) who oriented them to the site and areas of proposed development. The proposed development will include a new home and garage with various walkways and driveways built nearest Morgan Drive, primarily in scarcely vegetated uplands.

The entire property was surveyed by foot starting at the site entrance at Morgan Drive. A thorough investigation was performed within the parcel boundary focused on the area of proposed development. The development will impact an upland area immediately east of Morgan Drive and two wetland areas. The wetland types to be impacted are scrub-shrub wetlands and emergent wetlands. Photos and a photo key from the reconnaissance are included in Attachment 2.

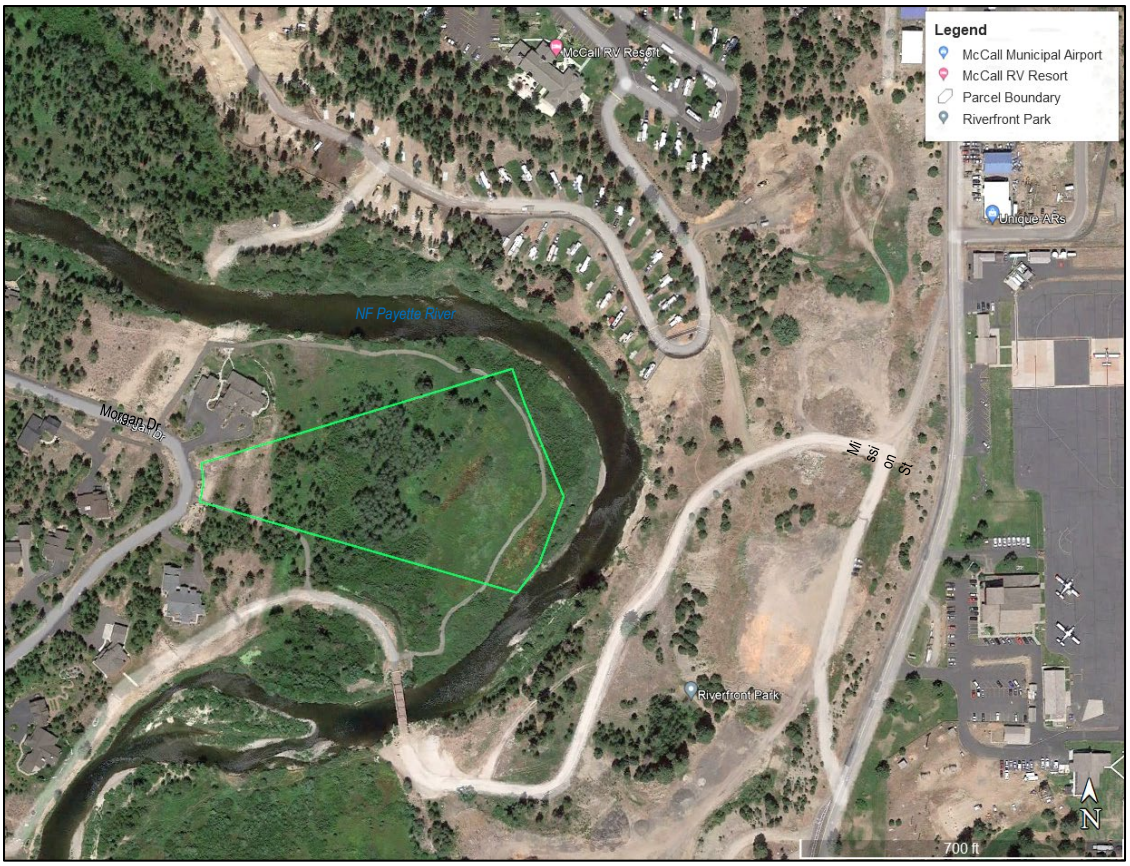


Figure 1. Vicinity map of River's Crossing Subdivision Lot 19, Block 2 (Parcel RPM05380020190)

The portion of the property nearest Morgan Drive is vegetated with upland grasses, scattered shrubs, and various flowering plants. The portion of the property further away from Morgan Drive is where wetlands are concentrated. This area is more densely vegetated with various flowering plants and includes clusters of large aspens and lodgepole pines.

No bird nests were observed at the time of the site visit. Three bird species were identified at the time of the site visit: American Goldfinch, Red Winged Blackbird, and Common Swallow. All birds were observed in the eastern most wetlands adjacent to the river, outside of the influence of the proposed development. None of the species found in Tables 1, 3, or 4 were observed during the field visit. Most wetland areas were saturated with approximately 2-3 inches of standing water. A list of plants observed is included in Attachment 3.

5.0 DISCUSSION

Threatened or Endangered Species. Canada Lynx (*Lynx canadensis*) is a mammal species that has a "threatened" ESA status. The Canada Lynx habitat includes boreal spruce-fir forest ecosystems known as the taiga. This species prefers areas of horizontal forest cover with large populations of snowshoe hares (USFWS ECOS, 2023). Due to the developed nature of the site, proximity to humans, and limited access to prey, this species would not be found on the site and the proposed project have no effect on the species.

North American Wolverine (*Gulo gulo luscus*) is a mammal that has a "proposed threatened" ESA status. The North American Wolverine habitat includes a variety of biomes including Arctic tundra, subarctic-alpine tundra, boreal forest, mixed forest, redwood forest, and coniferous forest. Their habitat is largely attributed to the availability of food. The North American Wolverine primarily scavenges carrion but can supplement their diet with small animals, birds, and fruit or berries (USFWS ECOS, 2023). Due to the developed nature of the site, and proximity to humans, and limited food sources, this species would not be found on the site and the proposed project to have no effect on the species.

Monarch Butterfly (*Danaus plexippus*) is an insect that has a "candidate" ESA status. The adult Monarch Butterfly habitat includes prairies, meadows, and grasslands populated with flowering plants. As Monarch Caterpillars only eat milkweed plants, the Monarch Butterfly relies on milkweed to lay their eggs (USFWS ECOS, 2023). No milkweed was observed on the project site. Many flowering plants within the property will remain undisturbed, providing habitat for adult Monarch Butterflies. Therefore, the proposed project may affect Monarch Butterfly, but is not likely to jeopardize the continued existence of this candidate species.

Table 1. USFWS IPaC Endangered Species Act Listed Species

Scientific Name	Common Name	ESA Listing Status	Category
Lynx canadensis	Canada Lynx	Threatened	Mammal
Gulo gulo luscus	North American Wolverine	Proposed Threatened	Mammal
Danaus plexippus	Monarch Butterfly	Candidate	Insect

SGCN and BCC Species. The SGCN lists two bird species as Tier 2 SGCN status, four bird species as Tier 3, one mammal (bat) species as Tier 2, one mammal (bat) species as Tier 3, and one invertebrate (mussel) species as Tier 2. The IDFG correspondence addressing SGCN species states that while the parcel has an intact native habitat with large deciduous trees; due to the surrounding developments, the agency would not anticipate effects from the proposed development to affect any SGCN species. No SGCN listed species were observed on the project site at the time of the site visit.

Invertebrates will not be harmed as there is no in-channel work being performed. The correspondence does highlight the nesting and perching potential of the deciduous trees located on the property and suggests the following:

> *"According to the Migratory Bird Treaty Act of 1918 (MBTA), if birds are actively using those trees for nesting and chicks are present, the nests may not be disturbed (i.e., the trees may not be removed) until after the chicks have fledged and permanently left the nest. Questions related to the MBTA and its rules and regulations should be directed to the Idaho U.S. Fish and Wildlife Service Office at (208) 378-5243."*

IDFG offered several recommended practices for residential subdivisions and houses located in areas such as this property. These are included in Attachment 1.

The IPaC Report lists fourteen (14) bird species as BCC's, thirteen (13) of which may breed in the vicinity of the project area. Breeding season for these species' ranges from January through August. The IPaC provides a probability of presence summary, determining when BCCs are most likely to be present in the project area. No nests of the species listed were observed at the time of the site visit.

Bald Eagles *(Haliaeetus leucocephalus)* have been observed in the vicinity of the project and are well documented in the McCall area, while Golden Eagles *(Aquila chrysaetos)* have occasionally been recorded in the McCall area (IDFG, 2022). No Bald Eagles or nests were observed at the time of the site visit. Because of the level of human activity, bald eagles foraging in the area are likely highly acclimated to human activity; therefore, no impacts will occur.

Wetlands. The proposed development proposes to impact 0.15 acres of the 2.7 acres of wetlands that are identified on the 5.29 acre site. Wetland impacts have been both avoided by placing the majority of the new residence in the upland area near Morgan Drive and minimized by impacting the lesser value scrub-shrub wetlands and preserving the older forested wetlands.

Impacts to wetlands will occur under a permit issued by the US Army Corps of Engineering and coverage under the IDEQ's 401 Water Quality Certification blanket coverage. Permit Drawings that show wetland types and impacts are in Attachment 4.

Stormwater and Site Control Best Management Practices (described further below) would surround the area of disturbance to protect adjacent wetlands.

Water Quality. Protection of water quality is addressed in the conditions of the USACE permit required to fill wetlands, the IDEQ's Idaho Pollution Discharge Elimination System (IPDES) Construction General Permit (CGP), and the City of McCall's Drainage Management Guidelines[1]

The USACE permit requires appropriate soil erosion and sediment control measures to be used and maintained in effective operating condition during construction. The IPDES CGP also requires the stabilization of disturbed areas and the use of Best Management Practices (BMP) to protect runoff from the project site to river and adjacent wetland areas. The Code also requires similar measures.

An erosion control plan was developed for the project in 2020 and included in Attachment 4. The proposed includes the follow proposed measure:

1. Stabilized Construction Entrance /Exit
2. Onsite Proposed Stormwater Management Basins (6 total)
3. Silt fencing and fiber wattles located around the perimeter of the site

By implementing these proposed BMPs, the proposed project would presumably be able to adhere to Idaho's Antidegradation Policy and maintain (and not diminish) the reach's status of fully supporting Primary Contact Recreation and well as not create additional harm to its status of not supporting Cold Water Aquatic Life or Salmonid Spawning.

These proposed BMPs will manage runoff and prevent impermissible runoff from occurring.

Fish and Aquatic Habitat. As discussed previously, the proposed development is sited as far west on the parcel as possible with a minimal distance from the site to the river (approximately 220 feet). Therefore, harm to fish and aquatic habitat in the river are first avoided by site layout.

[1] Drainage Management Guidelines (Toothman-Orton Engineers, 1997): https://evogov.s3.amazonaws.com/141/media/115536.pdf

Additionally, the stormwater plan the contractor would implement would manage runoff during construction and stabilize the site post-construction. Stormwater management basins would detain stormwater on site so post-construction conditions match pre-construction conditions. Contractors would access the site through a stabilized entrance located at Morgan Drive. By following these measures, there would be minimal to no opportunity to harm fish or aquatic habitat.

6.0 CONCLUSIONS

Threatened or Endangered Species. No Federally listed species were observed during a field visit to the project area. No suitable habitat exists to support Canada Lynx, North American Wolverine, or Monarch Butterfly caterpillars within the project area. The proposed project would have no effect on the Canada Lynx and North American Wolverine and may affect the Monarch Butterfly but is not likely to jeopardize the continued existence of this candidate species. In other words, Block 19 does not possess significant wildlife habitat harboring any threatened or endangered species (MCC 3.7.023(C)(d)). The rationale for these decisions is provided in Table 2.

The proposed development would not be anticipated to have an effect on either native plant, terrestrial wildlife populations, or SGCN species due to the surrounding residential development.

Table 2. Threatened or Endangered Species Effects Determination

Common Name	ESA Listing Status	Effect Determination	Rationale
Canada Lynx	Threatened	No Effect	No habitat for this species in the project area.
North American Wolverine	Proposed Threatened	No Effect	No habitat for this species in the project area.
Monarch Butterfly	Candidate	May affect; not likely to jeopardize the continued existence of species.	No milkweed was observed on the project site. Any effect to flowering plants would be negligible by proposed development. Pollinator habitat (although no milkweed was observed) may be in the project area where mature riparian vegetation exists. Proposed BMPs are included.

Wetlands. The proposed development has been designed and would be implemented to (1) avoid wetlands, (2) minimize impacts to higher value wetlands and (3) only impact wetlands permitted by the agency with jurisdiction, the USACE. Best Management Practices would be implemented during construction.

It is believed that the proposed development has minimized the risk of harm to wetlands to the best practicable extent.

Water Quality. By adhering to erosion and sediment control measures proposed to be implemented under the USACE permit required to fill wetlands, the IDEQ's Idaho Pollution Discharge Elimination System (IPDES) Construction General Permit (CGP), and the City of McCall's Drainage Management Guidelines, the risk of harm to water quality in the river and surrounding wetlands has been minimized to the best extent practicable.

Fish and Aquatic Habitat. Fish and aquatic habitat in the river are best protected from harm by site design and by the project adhering to its proposed stormwater runoff controls. By following these methods, it is understood the proposed development would minimize harm to these resources.

Impermissible Runoff. The construction and post-construction stormwater management plan will, at a minimum, follow the City of McCall Drainage Management Guidelines and manage/prevent runoff from the proposed development.

Best Management Practices (BMPs)

The project will remove several small to medium sized lodge pole pine trees and aspens around the proposed building pad. All planned work shall adhere to the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) requirements. The nesting season for this area is from May 15th to August 15th.

The Contractor shall implement the following BMP's to support pollinators and pollinator habitat:

1. Protect Existing Habitat: Protect existing stands of native vegetation. Ground disturbing activities will be limited only to those areas deemed necessary for the construction of the project. Disturbing existing areas of native vegetation purely for the convenience of the contractor is prohibited.
2. Remove and control noxious weeds in the project limits.
3. Herbicide Use: Reduce the risk of herbicide exposure to pollinators by: (1) Eliminating or reducing herbicide exposure to pollinators by first utilizing non-chemical (manual) methods to eliminate noxious and undesirable weeds. (2) If herbicide use is necessary, spot treat specific weeds with selective herbicides that do not leave residuals in the soil. (3) Treat weeds before they flower, to avoid spraying when pollinators are present. (4) Avoid spray application if winds are above 10 mph.
4. Re-vegetation: Revegetate disturbed areas with a native seed mix, including milkweed species.

The Contractor shall implement the following BMP's to protect wetlands, fish and aquatic habitat; and water quality:

1. Prepare and implement a Storm Water Pollution Prevention Plan
2. Adhere to the City of McCall's Drainage Management Guidelines (1997)
3. Proposed Best Management Practices:
    a. Stabilized Construction Entrance /Exit
    b. Onsite Proposed Stormwater Management Basins (6 total)
    c. Silt fencing and fiber wattles located around the perimeter of the site

7.0 REFERENCES

Idaho Fish and Game (IDFG), Brandon Flack (personal communication, June 08, 2023).

Idaho Fish and Game (IDFG): View & Export. (2022, October 17). https://idfg.idaho.gov/species/observations/list?species_id=18587&county_id=224 (accessed June 12, 2023).

McCall Code of McCall, Idaho. 1994. American Legal Publishing.

U.S. Fish and Wildlife Service (USFWS): Environmental Conservation Online System (ECOS). Species Profile. https://ecos.fws.gov/ecp/species (accessed June 12, 2023).

U.S. Fish & Wildlife Service (USFWS): Information for Planning and Consultation (IPaC) https://ipac.ecosphere.fws.gov (accessed June 08, 2023, printed June 13, 2023).

ATTACHMENT 1 – AGENCY COORDINATION

Erica Koppes

From: Flack,Brandon <brandon.flack@idfg.idaho.gov>
Sent: Thursday, June 8, 2023 2:43 PM
To: Erica Koppes
Cc: Patrick Wickman
Subject: RE: SGCN Species McCall Lot 19

EXTERNAL MESSAGE

Hi Erica,

The Idaho Department of Fish and Game (IDFG) has received your request for a list of SGCN species on and around parcel RPM05380020190 (5.29 acres) located on Morgan Drive in McCall, ID for planning and zoning purposes. This email serves as an IDFG letter addressing fish, wildlife, and plant resources as a component of the natural features of the property, including any sensitive plant and wildlife species recorded in the project vicinity.

IDFG has not conducted specific wildlife surveys on the property. The Idaho Fish and Wildlife Information System (IFWIS) database contains no records of special-status plant or animal species on the project property. The IFWIS database contains records of 9 Species of Greatest Conservation Need (SGCN) within 0.5 miles of the property boundary.

Common Name	Scientific Name	Category	SGCN Tier
Clark's Nutcracker	*Nucifraga columbiana*	Bird	3
Common Nighthawk	*Chordeiles minor*	Bird	3
Golden Eagle	*Aquila chrysaetos*	Bird	2
Little Brown Myotis	*Myotis lucifugus*	Mammal (bat)	3
Olive-sided Flycatcher	*Contopus cooperi*	Bird	3
Sandhill Crane	*Grus canadensis*	Bird	3
Silver-haired Bat	*Lasionycteris noctivagans*	Mammal (bat)	2
Western Grebe	*Aechmophorus occidentalis*	Bird	2
Western Pearlshell	*Margaritifera falcata*	Invertebrate (mussel)	2

Aerial imagery indicates the parcel has a disturbed area near Morgan Dr. and that it likely has intact native habitat with large deciduous trees from there down to the river. The parcel is surrounded by other developed properties. Considering the parcel is surrounded by other development, IDFG would not anticipate effects from a residential home on native plant or terrestrial wildlife populations, including the SGCN species listed above. However, the presence of large deciduous trees can provide nesting and perching locations for many bird species. According to the Migratory Bird Treaty Act of 1918 (MBTA), if birds are actively using those trees for nesting and chicks are present, the nests may not be disturbed (i.e., the trees may not be removed) until after the chicks have fledged and permanently left the nest. Questions related to the MBTA and its rules and regulations should be directed to the Idaho U.S. Fish and Wildlife Service Office at (208) 378-5243.

In addition, IDFG recommends the following practices for residential subdivisions and houses that are located in areas such as this:

- Residents should control pets, including cats, at all times (fenced yard, keep indoors, kenneled, leashed, etc.). Pets, at-large, dramatically increase a residential subdivision's negative effects on wildlife.
- Prohibit the feeding of wildlife and require that potential wildlife attractants (pet food, garbage, gardens, etc.) be maintained in a way to reduce attraction of wildlife species (skunks, foxes,

raccoons, magpies, etc.). Eliminating or minimizing the potential for wildlife depredations is the responsibility of the property owner.
- Native vegetation should be retained to the extent possible during project implementation to support birds, small mammals, and pollinator species.
- Yew species should not be used as landscaping plants as they are highly toxic to wildlife, pets, and humans.
- Retain buffers of riparian vegetation that surround any wetland resources on the property.
- If ponds are developed, legal water rights are required for the appropriate beneficial use (storage, irrigation, recreation, etc.). If the ponds will be used for fishing, a private pond permit from IDFG is required to stock the ponds with fish, and a live fish transport permit may also be required.
- All fencing within and around the property should be wildlife friendly. IDFG can provide additional details upon request.

Thank you for your interest in the state's fish, wildlife, and plant resources. Please feel free to contact me with additional information needs or other questions.

Regards,

Brandon Flack
Regional Technical Assistance Manager
Idaho Dept. of Fish and Game
Southwest Region
15950 N. Gate Blvd.
Nampa, ID 83687
Ph: (208) 854-8947

From: Erica Koppes <ekoppes@forsgren.com>
Sent: Wednesday, June 7, 2023 4:46 PM
To: Flack,Brandon <brandon.flack@idfg.idaho.gov>
Cc: Patrick Wickman <pwickman@forsgren.com>
Subject: SGCN Species McCall Lot 19

Brandon,
I am requesting a list of SGCN species for planning and zoning purposes for the Parcel RPM05380020190 (5.29 acres) and surrounding area, located in the City of McCall, Idaho. I have attached a .kmz with the project location.

Thank you,
Erica Koppes
Water Resource Scientist
FORSGREN Associates Inc.
1109 West Myrtle Street, Suite 300

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Idaho Fish And Wildlife Office
1387 South Vinnell Way, Suite 368
Boise, ID 83709-1657
Phone: (208) 378-5243 Fax: (208) 378-5262

In Reply Refer To:
Project Code: 2023-0093162
Project Name: Rivers Crossing - Lot 19

June 13, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

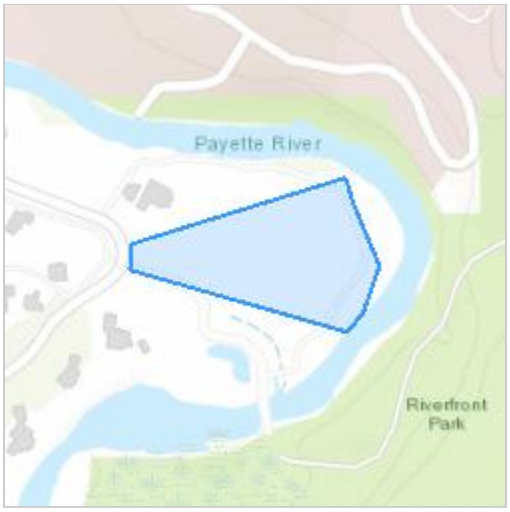
Idaho Fish And Wildlife Office
1387 South Vinnell Way, Suite 368
Boise, ID 83709-1657
(208) 378-5243

PROJECT SUMMARY

Project Code: 2023-0093162
Project Name: Rivers Crossing - Lot 19
Project Type: Residential Construction
Project Description: Forsgren Associates has been tasked with surveying a 5.3-acre property in McCall, Idaho to determine species present within and around the proposed site and the effects the proposed project has on any listed species. The Client intends to build a residential building on the property.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.892778050000004,-116.10977725993015,14z



Counties: Valley County, Idaho

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Canada Lynx *Lynx canadensis* Population: Wherever Found in Contiguous U.S. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3652	Threatened
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
California Gull *Larus californicus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31

NAME	BREEDING SEASON
Cassin's Finch *Carpodacus cassinii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Evening Grosbeak *Coccothraustes vespertinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
Franklin's Gull *Leucophaeus pipixcan* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Lewis's Woodpecker *Melanerpes lewis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9408	Breeds Apr 20 to Sep 30
Olive-sided Flycatcher *Contopus cooperi* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Rufous Hummingbird *selasphorus rufus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15
Western Grebe *aechmophorus occidentalis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 20 to Aug 5

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

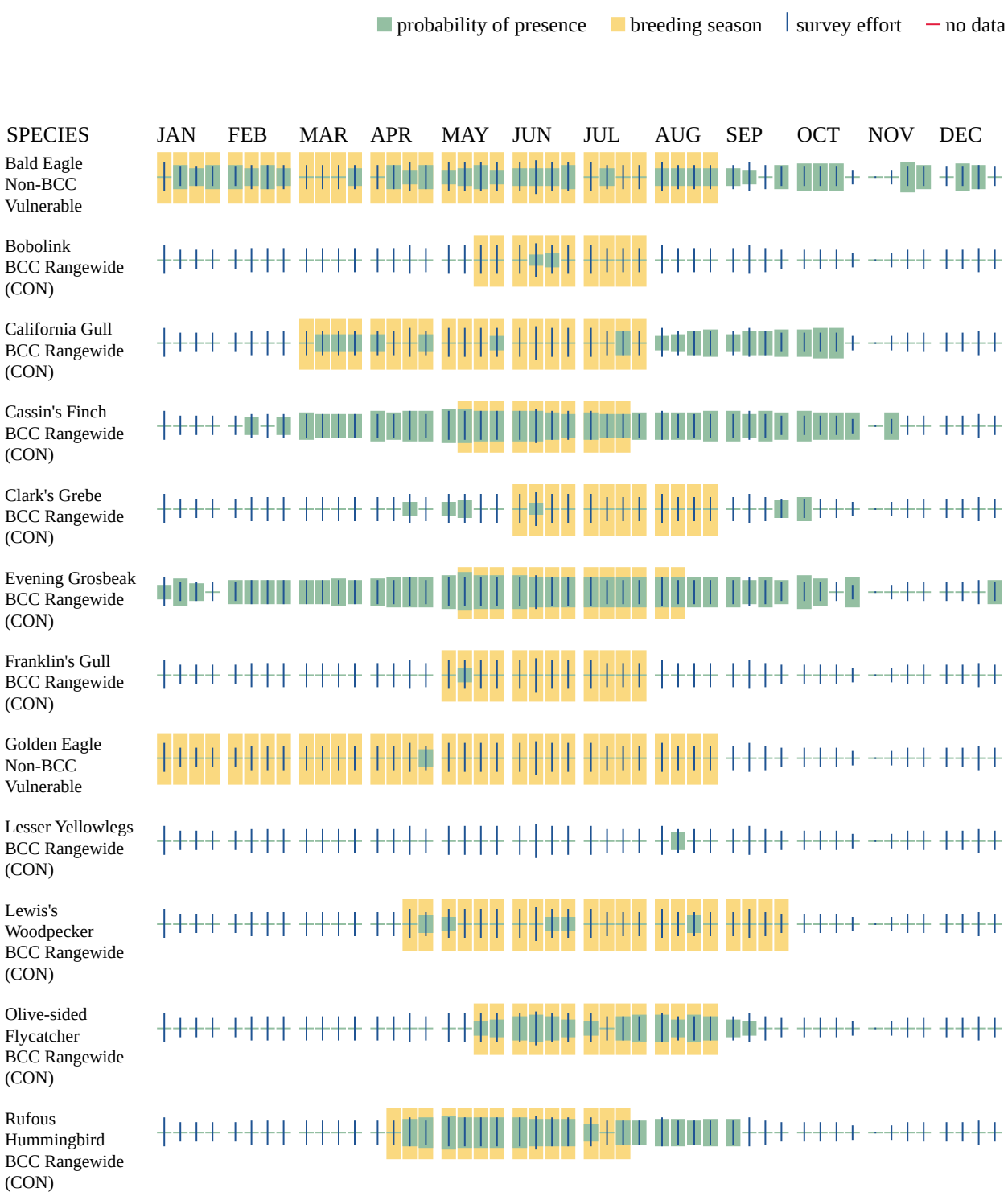
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

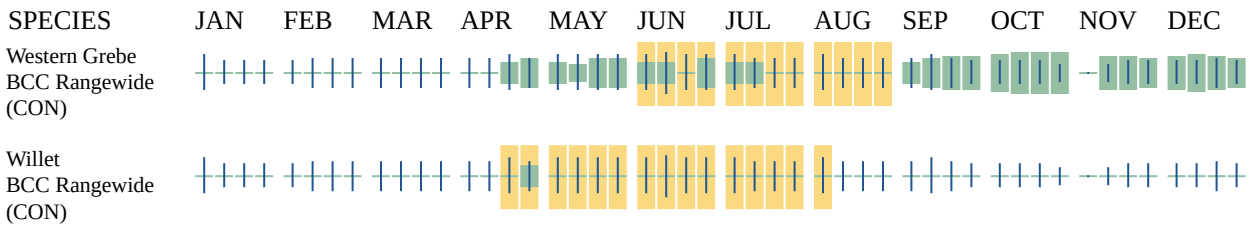
Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

MIGRATORY BIRDS FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER FORESTED/SHRUB WETLAND

- PSSA

FRESHWATER EMERGENT WETLAND

- PEM1A

IPAC USER CONTACT INFORMATION

Agency:	Forsgren-Associates-Inc
Name:	Erica Koppes
Address:	1109 W. Myrtle St.
Address Line 2:	Suite 300
City:	Boise
State:	ID
Zip:	93702
Email	ekoppes@forsgren.com
Phone:	2083423144

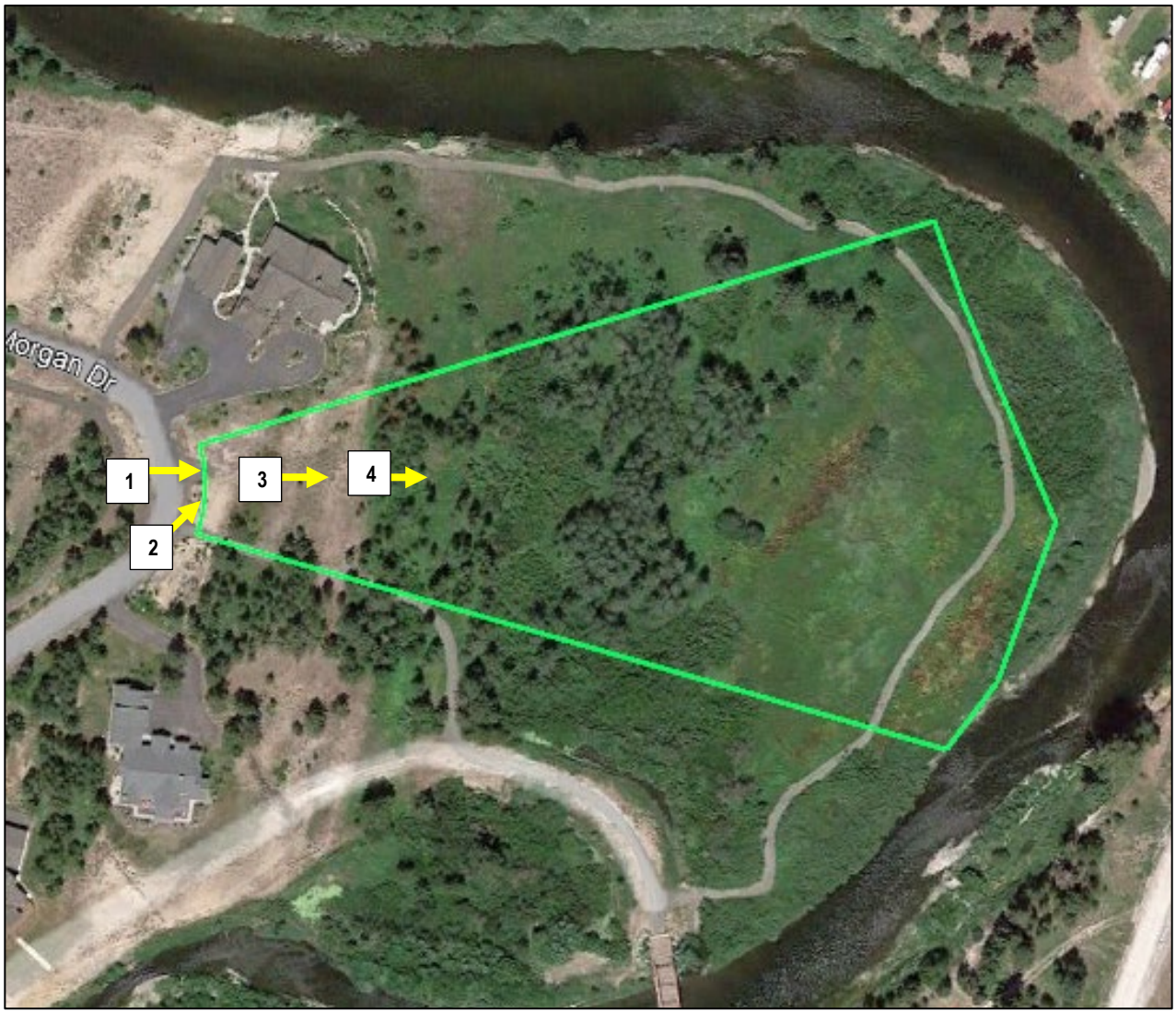
ATTACHMENT 2 – SITE PHOTOS

Photo 1. Lot entrance at Morgan Drive looking east. Upland area in foreground and trees in background to be developed.

Photo 2. Lot entrance at Morgan Drive looking northeast. Neighboring house to north.

Photo 3. Aspens and pine trees at proposed building site looking east.

Photo 4. Proposed wetland area to be disturbed by proposed building looking east.



BLOCK 19 LOT 2 – PHOTO KEY

ATTACHMENT 3 – LIST OF PLANTS OBSERVED ON SITE – JUNE 9, 2023

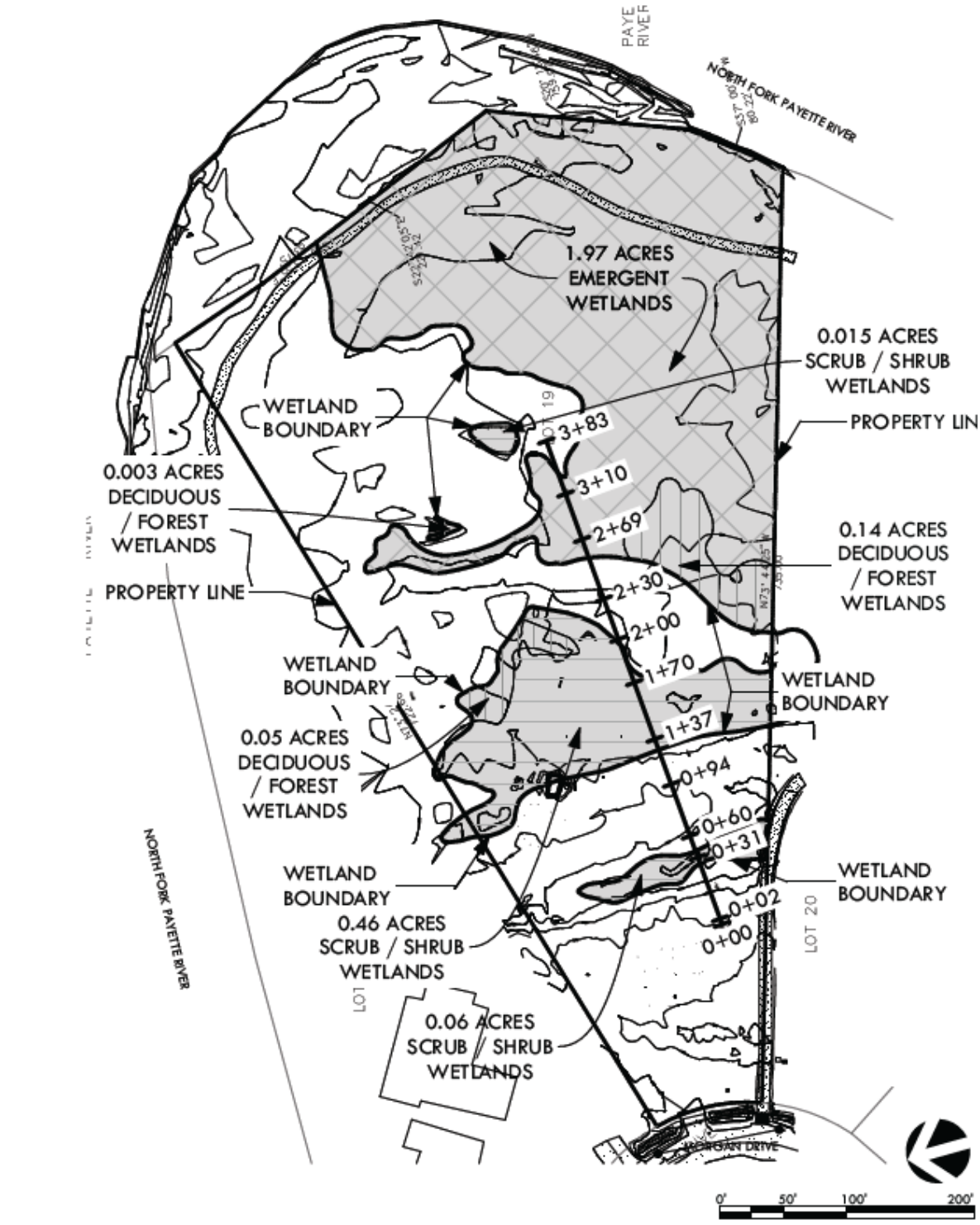
Table 3. USFWS IPaC Birds of Conservation Concern Listed Species

Scientific Name	Common Name
Haliaeetus leucocephalus	Bald Eagle
Dolichonyx oryzivorus	Bobolink
Larus californicus	California Gull
Carpodacus cassinii	Cassin's Finch
Aechmophorus clarkii	Clark's Grebe
Coccothraustes vespertinus	Evening Grosbeak
Leucophaeus pipixcan	Franklin's Gull
Aquila chrysaetos	Golden Eagle
Tringa flavipes	Lesser Yellowlegs
Melanerpes lewis	Lewis's Woodpecker
Contopus cooperi	Olive-sided Flycatcher
selasphorus rufus	Rufous Hummingbird
aechmophorus occidentalis	Western Grebe
Tringa semipalmata	Willet

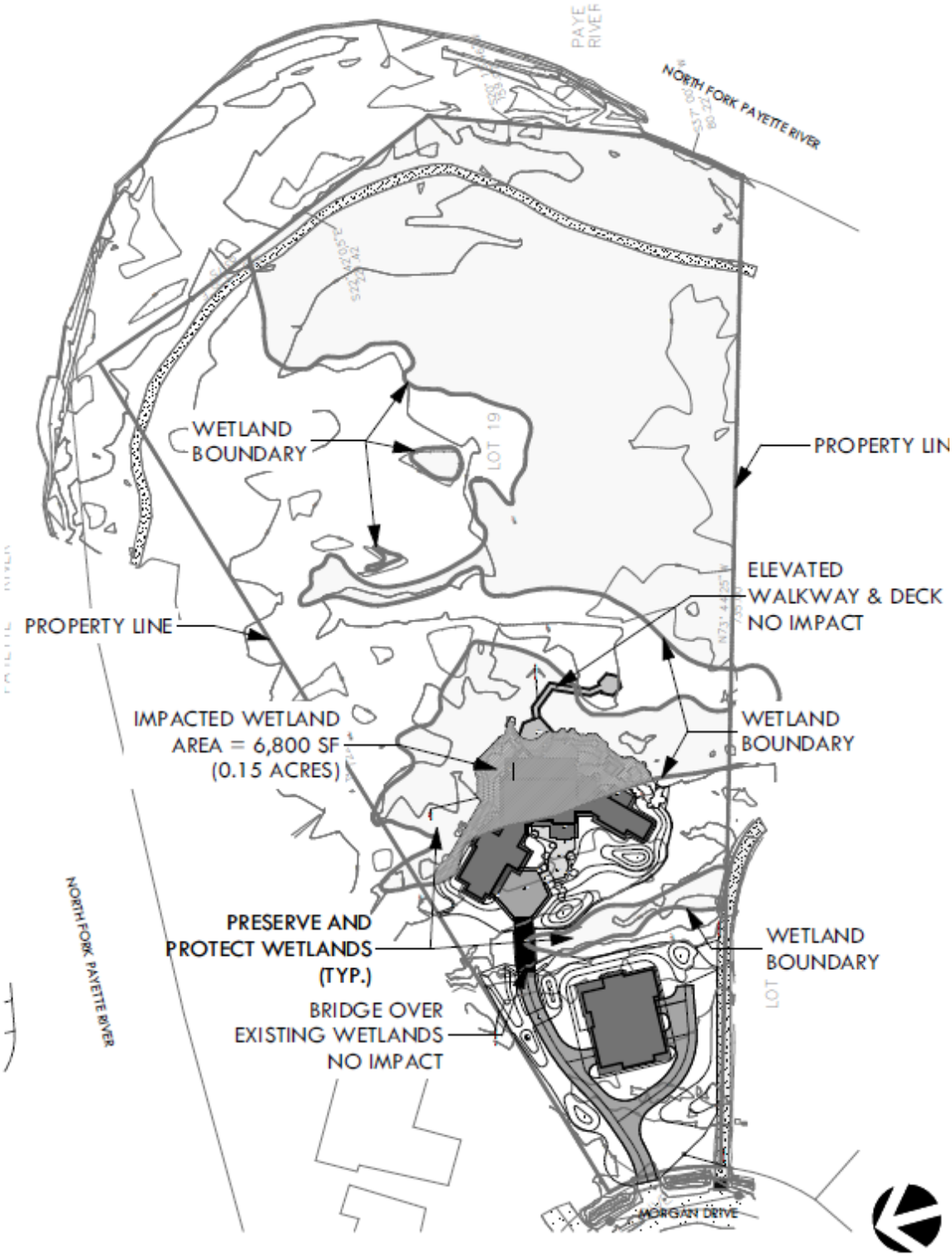
Table 4. IDFG IGWIS Species of Greatest Conservation Need

Scientific Name	Common Name	Category	SGCN Tier
Nucifraga columbiana	Clark's Nutcracker	Bird	3
Chordeiles minor	Common Nighthawk	Bird	3
Aquila chrysaetos	Golden Eagle	Bird	2
Myotis lucifugus	Little Brown Myotis	Mammal (bat)	3
Contopus cooperi	Olive-sided Flycatcher	Bird	3
Grus canadensis	Sandhill Crane	Bird	3
Lasionycteris noctivagans	Silver-haired Bat	Mammal (bat)	2
Aechmophorus occidentalis	Western Grebe	Bird	2
Margaritifera falcata	Western Pearlshell	Invertebrate (mussel)	2

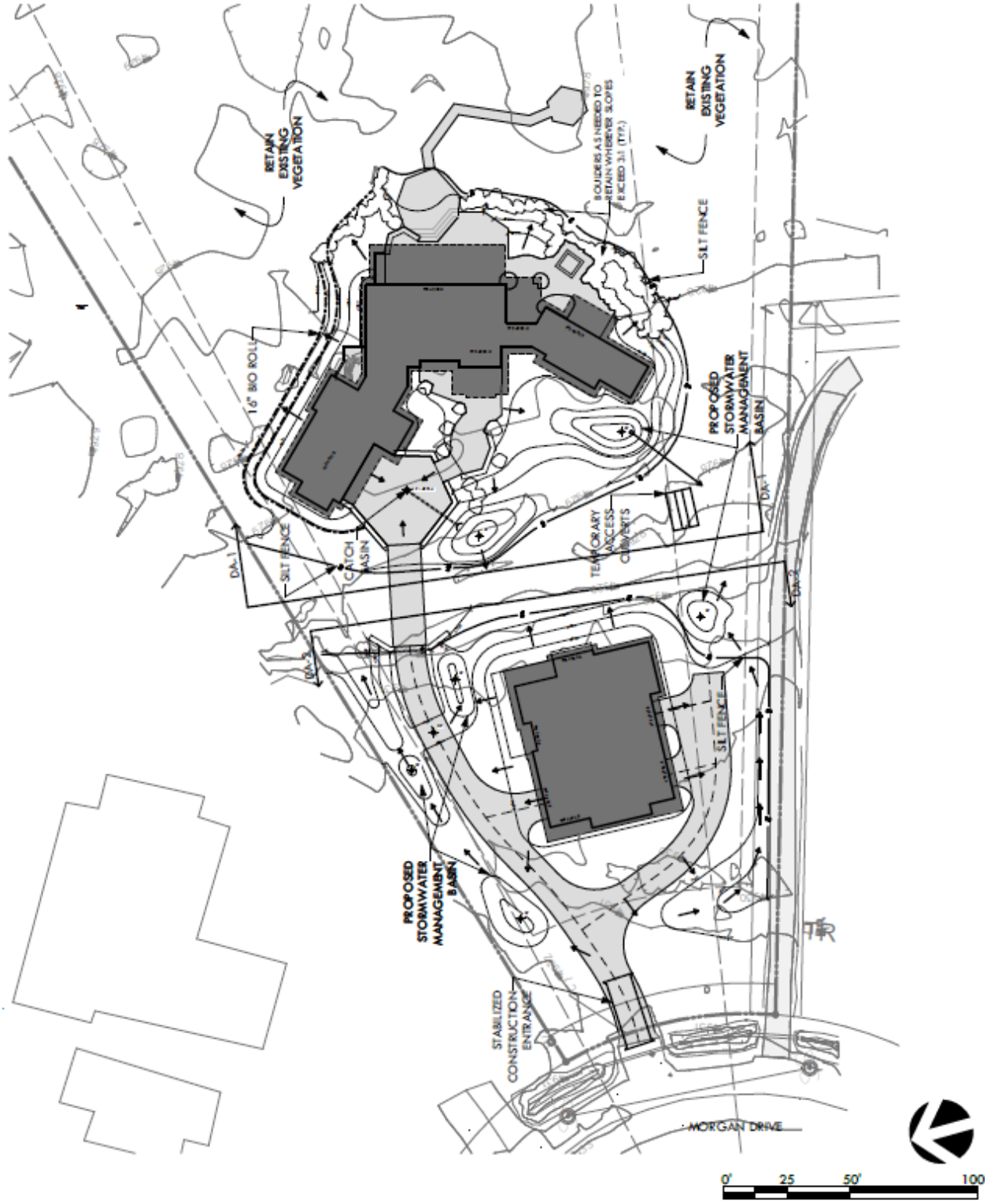
ATTACHMENT 3 – WETLANDS PERMIT DRAWINGS (AUGUST 2020)



JAMES FRONK CONSULTING, LLC. 14028 NORWOOD RD PO BOX 576 McCALL, ID 83638 (208) 634-8093	WETLAND DELINEATION SANDERS RESIDENCE 221 MORGAN DRIVE MCCALL ID 83638 RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2	FIGURE: 3 DRAWN BY: ES DATE: 8/24/2020



JAMES FRONK CONSULTING, LLC. 14028 NORWOOD RD PO BOX 576 McCALL, ID 83638 (208) 634-8093	WETLAND IMPACT WITH BUILDING SANDERS RESIDENCE 221 MORGAN DRIVE MCCALL ID 83638 RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2	FIGURE: 4 DRAWN BY: ES DATE: 8/24/2020



JAMES FRONK CONSULTING, LLC. 14028 NORWOOD RD PO BOX 576 McCALL, ID 83638 (208) 634-8093	EROSION CONTROL SANDERS RESIDENCE 221 MORGAN DRIVE MCCALL ID 83638 RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2	FIGURE: 7 DRAWN BY: ES DATE: 8/24/2020

MCCALL AREA
PLANNING AND ZONING COMMISSION
Minutes
September 12, 2023 – 4:30 p.m.
McCall City Hall – Lower Level & MSTeams Teleconference
216 E Park St, McCall, ID 83638

The Agenda has been amended on 9/12 at 1:02pm to correct the project description and legal description for DR-23-20 & SR-23-15 (ACTION ITEM) to reflect the project and public notice documents already noticed properly. The Agenda Description was dictated in error by the administrator.

Commissioner Rock noted the change of the Agenda item description and moved to adopt the agenda as posted, Commissioner Moss seconded. All commissioners voted aye and the agenda was adopted.

MEETING – Began at 4:30 p.m.

CALL TO ORDER AND ROLL CALL – Commissioners Robert Lyons (Chair), Dave Petty, Liz Rock, Tony Moss, and Dana Paugh were present. Commissioners Mihlfeith and Kinzer were absent. Brian Parker (City Planner), Meredith Todd (Assistant Planner), Morgan Stroud (Staff Engineer), Michelle Groenevelt (CED Director), and Bill Punkoney (City Land Use Attorney) were also in attendance.

1. REVIEW & APPROVAL OF MINUTES

- ~~**August 1, 2023 P&Z Minutes**~~

2. PRELIMINARY DEVELOPMENT PLAN REVIEW MEETINGS

Preliminary Development Plan Review: PUD & SUB
500 1st St – Rick Williams of Plantation Homes for Alan Cottle
A Preliminary Development Review Plan for a Planned Unit Development and Subdivision to create a 48-unit single-family townhome subdivision on approximately 5.97 acres. The property is zoned R8–Medium Density Residential, and is more particularly described as:
McCall Acreage tax no's 409 and 410, situate in the SW ¼ of the S! ¼ of Section 9, T18N, R3E, B.M., City of McCall, Idaho
Not A Public Hearing

Rick Williams of 11049 W Altar St and Derritt Kerner of David Evans Design-Engineering presented the Preliminary Development Plan for 46 Units on 5.97 acres at 500 1st St in partnership with the Alan Cottle Group. They reviewed a number of proposed infrastructure improvements including sewer and water improvements and ROW expansion, as well as potential site amenities such as Pickleball and a small, private community gym.

Commissioners asked whether there will be other traffic or circulation improvements warranted with the development and a traffic study will be completed for the full application. There will likely be significant improvement of 1st St across the frontage of both properties.

Preliminary Development Plan Review: PUD & SUB
520 1st St – Rick Williams of Plantation Homes for Dennis Harmon

A Preliminary Development Plan Review for a Planned Unit Development and Subdivision to create a 6-unit single-family townhome subdivision on approximately 0.82 acres. The property is zoned R8 – Medium Density Residential, and is more particularly described as:

The Easterly part of McCall Acreage Tax No. 201 and Amended Tax No 202, situate in the SW ¼ of the SW ¼ of Section 9, T18N, R3E, B.M., City of McCall, Idaho.

Not A Public Hearing

Rick Williams of 11049 W Altar St and Derritt Kerner of David Evans Design-Engineering presented the Preliminary Development Plan for 6 units at 520 1st St. This property will be connected via a through-private-street with the project at 500 1st St. Mr. Derritt asked whether some kind of alleviation would be possible to pursue a closer setback to the old Railroad Right-Of-Way and commissioners recommended the applicants work on the issue with staff to determine options available. Commissioners also asked whether any local housing units would be available and Mr. Williams indicated it would not be possible to complete the 2,000 to 2,200 square foot units for less than $800,000-$1.2 million per unit across both projects. Commissioners asked for more information on what the units would include and Mr. Williams described there would be at least 2-3 bedrooms, a 2-car garage and 1-2 bathrooms in each unit.

Mr. Williams discussed some of the sewer improvements and asked Jeff Bateman, District Manager at Payette Lakes Recreational Water & Sewer District, to describe the sewer improvement expectations in brief. He mentioned some changes to locations of lines to be determined based on engineering design.

Preliminary Development Plan Review: CUP
1207 Zachary Dr – Colby Patchin

A preliminary Development Plan Review for a Short Term Rental with an Occupancy greater than 10 persons. The property is zoned R4 – Low Density Residential, and is more particularly described as:

McCall Acreage Tax No 99, situate in the NE ¼ of the NE ¼ of Section 7, T18N, R3E, B.m>, City of McCall, Valley County, Idaho.

Not A Public Hearing

Colby Patchin of 1207 Zachary Road and Kelly Hill of DoneRight Management presented the pre-application to entitle the use of a single-family residence with 8 bedrooms as a Short-Term Rental for a total of 18 occupants following the maximum set by the city as two (2) persons per bedroom plus two (2). The home has previously been operated as a Short-Term Rental with minimal challenges and has an inadvertent ADU inside that has been corrected structurally to only allow access to the additional living space from within the existing dwelling. The Neighborhood Meeting has been completed already. The property has an interesting access via “Zachary Road” which provides access to 3 other homes. Guests will be required to park on the property, and not on the access easement due to the possibility of impeding the access easement at the wishes of the neighboring owners.

Ms. Hill described the noise monitoring and video monitoring systems that DoneRight uses to better keep an eye on properties and ensure the tenants renting the property are abiding by the City and DoneRight rules and regulations including noise ordinances and tenants/guests allowed on property. Commissioners asked Mr. Patchin to be cognizant of having parking reasonably limited, trash service that is realistic to manage the waste of the property, and how they plan to enforce the rules they’ve developed beyond the conceptual level.

3. CONSENT AGENDA

All matters which are listed within the consent section of the agenda have been distributed to each member of the McCall Area Planning and Zoning Commission for reading and study. Items listed are considered routine by the Commission and will be enacted with one motion unless a commissioner specifically requests it to be removed from the Consent Agenda to be considered separately. Staff recommends approval of the following ACTION ITEMS:

ROS-23-01 (ACTION ITEM)
TBD Spruce St – Greco Construction
A Record of Survey application to create four (4) total lots of 11,072 square-feet, 11,072 square-feet, 11,072 square-feet, and 10,370 square-feet. The property is zoned R4 – Low Density Residential, is located within the Spring Mountain Boulevard Scenic Route Buffer, and is more particularly described as:

The SE ¼ of the NE ¼ of Section 9, T18N, R3E, B.M., City of McCall, Valley County, Idaho

Not a Public Hearing

ROS-23-02 (ACTION ITEM)
TBD Osprey Dr/Appaloosa Trl
An Application for a Record of Survey to combine Lots 88, 89, and 108 of Block 13 of Whitetail PUD Phase 2 for a combined lot acreage of 4.547 acres or 198,073 square feet. The property is zoned RR – Rural Residential, and is more particularly described as:

Lots 88, 89, and 108 of Block 13 of Whitetail PUD Phase 2, situate in the SE ¼ of the NW ¼ of Section 13, T18N, R2E, B.M., City of McCall, Valley County, Idaho.

Not a Public Hearing

AA-22-14 (ACTION ITEM) – IMPACT AREA
2030 Payette Dr – Ryan McColly for Mike Gustavel
An Application for Administrative Design Approval to substitute the exterior finish materials on a single-family home which was previously granted Commission-Level Design Review Approval. The original Design Review approval was to construct a 6,081 square foot residence with attached garage adjacent to Payette Lake. The property is zoned R4 – Low Density Residential and is more particularly described as:

Lot 3, Block 1 of Syringa Park - State Subdivision situate in Section 32, T18N, R3E, B.M., Valley County, Idaho.

Not a Public Hearing

Findings of Fact & Conclusions of Law from August 1, 2023, P&Z Commission Agenda & Review

CUP-23-04 & DR-23-17 (ACTION ITEM)
400 Krahn Lane – IMPACT AREA
Vince Beer: An application for a Conditional Use Permit and Design Review to develop a new self-storage facility with three (3) buildings, to include a total of 190 storage units of varying size. An existing single-family residence will remain on site. The property is zoned CC – Community Commercial and is more particularly described as:

A parcel located in the SE ¼ of Section 16, T18N, R3E, B.M., City of McCall, Valley County, Idaho.

DR-23-18 & SR-23-11 (ACTION ITEM)
415 S Samson Trail – IMPACT AREA

Kim Apperson: An application for Design Review & Scenic Route Review to construct a new, 800 square foot accessory garage on a parcel with an existing single-family residence and small accessory structures. The property is zoned R1 – Residential 1 Acre, and is more particularly described as:

Tax No's. 18-A and 18-B of Lot 16 of Block 1 of the West Place Subdivision, situated in the SW ¼ of the SW ¼ of Section 15, T18N, R3E, B.M., Valley County, Idaho.

Commissioner Petty moved to approve the consent agenda, Commissioner Moss seconded. All commissioners voted aye and the motion carried.

4. OLD BUSINESS - *No old business*

5. NEW BUSINESS

DR-23-20 & SR-23-14 (ACTION ITEM)
1111 Knowles Rd – David Henderson
~~An application for Design Review and Scenic Route Review to rebuild a collapsed commercial building and construct a new addition of residential space, creating a mixed-use development. new self-storage facility with three (3) buildings, to include a total of 190 storage units of varying size. An existing single family residence will remain on site. The property is zoned CC – Community Commercial and is more particularly described as:~~

~~A parcel located in the SE ¼ of Section 16, T18N, R3E, B.M., City of McCall, Valley County, Idaho.~~

An Application for Design Review and Scenic Route Review to reconstruct a collapsed portion of an existing commercial building and construct a residential addition onto the rear of the structure, creating a mixed-use development with one commercial unit and one residential unit. The Site will also provide 4 parking spaces and proposes to include and Electric Vehicle Charging station. The Property is zoned CC – Community Commercial, is located within the West Lake Street Scenic Route Overlay, and is more particularly described as:

McCall Acreage Tax No. 36-A-1, situate in the SE ¼ of the NE ¼ of Section 7, T18N, R3E, B.M., City of McCall, Valley County, Idaho

PUBLIC HEARING

David Henderson of 3241 Big Creek Rd in New Meadows and owner of 1111 Knowles Rd, presented the application to reconstruct a commercial structure and add a residential unit to create a mixed-use building and development. His hope is to use the commercial space as a low-impact retail space and add a 2-bedroom 1-bathroom apartment above/behind the unit. Commissioners mentioned they would prefer having less vehicular access points but understand there is an existing access on the N side of the existing building.

Mr. Parker provided the Staff Report and mentioned the proposal is generally consistent with the Comprehensive Plan and Zoning Regulations. The main condition of approval would be to move the parking area to south of the building to comply with Scenic Route standards, add a more detailed pedestrian pathway/entrance, and get a detailed ground level topographic survey due to the building heigh being greater than 30 feet.

Ms. Stroud provided the Engineering Report. The Streets department recommends the driveway be as far from the intersection with SH55 as possible, therefore on the South side of the building if possible as typically only 1 driveway access is maintained by the City in the winter. Ms. Stroud would also like to see

further clarification on the way stormwater is managed on the property given the flat lot and lack of space for a frontage swale.

Chairman Lyons opened and closed the public hearing with no comments from the public.

Commissioner Petty mentioned he doesn't see reorienting much of the design will play along well with the existing foundation and wonders if the request to change the vehicular access would be too much to ask given the constraints of the existing building. Commissioners also discussed whether there will be adequate drainage. Ms. Stroud clarified that with such a small building footprint there should be enough space to manage for the snow, the applicant may need to get creative and pile snow strategically.

Commissioner Petty moved to approved DR-23-20 & SR-23-14, Commissioner Moss seconded.

Appeal of FPDP-23-01 (ACTION ITEM)
221 Morgan Dr – Amy Holm
An appeal of the Administrator's decision to deny a Floodplain Development Permit Application. The property is zoned RE – Residential and is more particularly described as:
Lot 19, Block Two of the River's Crossing Subdivision situate in the S ½ of Section 17, T18N, R3E, B.M., City of McCall, Valley County, Idaho.
PUBLIC HEARING

Amy Holm of MPMP Law at 706 N First St and Jim Fronk of 14028 Norwood Rd, Environmental Consultant presented the Appeal to the Decision of the Administrator to deny a Floodplain Development Permit Application. The Sanders' wish to fill some of the 100-year floodplain according to the FEMA process to enable the desired development on their property. 2.7 acres of the property are delineated wetland area. The proposed filling would impact 5% of those 2.7 acres. At the FEMA level, the process for this would be a Conditional Letter of Map Revision (CLOMR) to change the Base Flood Elevation (BFE) and subsequent shape of the Special Flood Hazard Area (SFHA). Continuing the Federal Process, upon completing the CLOMR, the fill would be applied, and then the FEMA map for the 100 Year Flood would be updated to reflect the impact of the fill in raising some ground elevation.

Referring to Exhibit 1, Ms. Holm and Mr. Holm identified the cross-hatched area totaling .15 acres as the wetlands to be filled; 0.33 acres of will are in 1% Floodplain but are not delineated as wetlands. This would be a total of 0.48 acres of fill. Mr. Fronk described the three classifications of wetlands present on the site and mentioned most is a shrub/scrub wetland. Ms. Holm described that upon applying for the Floodplain Development Permit according to the requirements in MCC 9.8.043 and that the application was denied by the Floodplain Administrator (City Planner in McCall). Other details provided by the appellant representative are included in the attachments to these minutes.

Commissioners asked the representatives the longer history of the previous applications for a Variance in earlier history. The previous Variance application had been denied based on the determination of there being adequate buildable area on the property and therefore not meeting the standards for a Variance. The application/appeal at this point is not based on those same plans, and have specifically endeavored to pursue environmental impact information to form a more detailed basis for determining impact.

Commissioners asked for some clarification on the procedure for their process and Mr. Punkoney clarified that the Commission should first open the public hearing, then move to admit all of the

information provided by the applicant thus far into the record, hear the staff report, collect any public testimony.

Commissioner Moss moved to open the public hearing and admit all of the applicants testimony to the record. Commissioner Petty seconded. A Roll Call vote was held:
Petty, Paugh, Lyons, Moss, Rock

Mr. Parker and Mr. Punkoney provided the Staff and Legal Report. Mr. Parker reviewed the "abrogation" clause for interpreting conflicting sections. Because the applicants are requesting to do a fill-only process involving filling, grubbing, dredging, scrubbing or excavating within the Shoreline Environs Zone, the applicants must prove they are causing no harm. Harm is defined in the Shoreline Environs code to include "filling." There also is no proposal for the property at this time beyond adding the fill. Commissioners asked for clarification on all the different

Chairman Lyons called for public testimony:

One letter of opposition to the appeal was submitted by Charles Petrock

Cindy Sanders, owner of 221 Morgan Dr spoke in support of her appeal clarifying that they are trying to follow the processes required of both the HOA and the City and hope this is the way to do it.

Chairman Lyons closed the public comment period.

Ms. Holm rebutted the Staff Report and argued that the Shoreline Environs Zone rules from Title 3 Chapter 7 (.023) do not apply because the request is not yet for a building and does not cause "harm" based on the analysis of a professional Biologist as included in the record. She argues that only the instructions of the Floodplain process in Title 9 are applicable, therefore granting the Floodplain Development Permit previously denied by the administrator. Mr. Fronk added that in preparation for the Federal Process beyond the McCall City Code Compliance process, the property has completed extensive environmental research but stands at this juncture awaiting direction from the City of McCall regarding the Floodplain Development Permit.

Commissioner Petty asked for clarification on what standard(s) applies to placing "fill" in the cross-hatched, proposed fill area and Mr. Punkoney clarified that the only standards applicable in this process that are for deliberation at this time. For simplicity, Mr. Punkoney asked Mr. Parker what code sections apply to this request:

1) Title 9.8 – Floodplain Ordinance
2) 9.8.035
3) Title 3.7
4) 3.07.022

Commissioner Rock asked to have clarification on where Title 3 requires a building permit for fill

5) 3.8.02(G) – Filling, Grubbing, 3.8.023 (Timber Harvest is only exception)

Michelle Groenevelt clarified that the code sections in conflict were identified as the reasons for denial with the ultimate intent of the code as written being to restrict filling of wetlands. Mr. Parker also

mentioned that any conflicts or less restrictive information in the Floodplain Ordinance is language provided by FEMA, which by including in City Code allows for lower flood insurance rates.

Mr. Punkoney also made a few clarifications with the commission for the record asking:

Did any commissioner do a site visit?

Commissioner Lyons had visited, 5 years ago but never in relationship to the current appeal

Does any commissioner have any pecuniary interest or conflicts?

Resounding no from all commissioners.

Mr. Punkoney indicated he had completed his questions.

Commissioner Petty moved to close the public hearing, Moss seconded. All commissioners voted to close the public hearing.

Commissioner Rock summarized the process staff described being: 1) Fill requires a building permit, 2) you cannot get a building permit which causes harm, which filling a wetland is; 3) therefore the Floodplain Permit is denied and the decision of the Administrator should be upheld. Commissioner Paugh concurred. Commissioners Rock and Paugh referenced back to the code indicating that what they are aiming to do simply doesn't allow for the process because filling the wetland is not allowed by code at this time. Commissioner Petty agreed that at this time, with this code, and with the request being to fill a wetland, he agrees the commission should uphold Staff's determination.

Mr. Punkoney advised the Commission to include "directing staff to draft findings and conclusions consistent with Staff's Decision"

Commissioner Rock moved to direct staff to draft findings consistent with Staff's Decision. Commissioner Paugh seconded. A roll call vote was held.

Chairman Lyons – No
Commissioner Moss – Yes
Commissioner Petty – Yes
Commissioner Paugh – Yes
Commissioner Rock – Yes

Appeal of AA-23-12 (ACTION ITEM)
200 Lenora St – Lakeshore Board Shop

An appeal of the Administrator's decision to deny an application to utilize waterskis as a roofing material. The property is zoned CBD – Central Business District, and is more particularly described as:

Government Lot 3, Block 4 situated in Section 9, T18N, R3E, B.M., Amended Plat of McCall, Original Townsite Book 1, Page 39 of Plats of Valley County, City of McCall, Valley County, Idaho.

PUBLIC HEARING

Commissioner Moss moved to open the public hearing. Commissioner Petty seconded.

Mr. Parker provided the staff report recommending denial of the Waterski-roofing installation installed without an Administrative Design Review. The waterskis are located along the street frontage rooflines

and are dayglo colors that are not what staff would describe as snow country roofing application or natural materials.

Cade Huskinson, owner of Lakeshore Board Shop said he did do the water skis and design changes without a permit and that he doesn't wish to argue with Staff's interpretation of code. He did however want to discuss the spirit of the Downtown Master Plan and Commercial Design Guidelines promoting the McCall Area as a Recreational Hub with a creative spirit.

Commissioners asked for clarification on the safety and application of the waterskis and Mr. Huskinson clarified that they are screwed to the roof support beams. He believes that the snow will sluff off of the skis and heat-tape will be installed between the existing roof and the water skis in the gap between the materials. Ms. Todd clarified that waterskis are not a tested or classified roofing material so we at the staff level cannot speak to whether or not the waterskis are

Mr. Punkoney asked to clarify if an application for Admin Approval was submitted, and it was, after the installation of the waterskis.

Chairman Lyons called for public testimony.

> Judith O'Flaherty of 126 E Park St in McCall spoke in appreciation of code and as a non-roofing materials expert, and she spoke in support of the spirit of the appeal due to the natural world being broader in color scheme than
>
> 5 letters in support had been submitted before the meeting packet deadline supporting the skis as good character brightening up the downtown.

Chairman Lyons closed the public testimony.

Moss moved to close the public hearing, Petty seconded.

Commissioner Rock said she loves the creativity, but considering being consistent with all other color and creative decisions made, she does not see a code-related pathway for granting the Appeal. Commissioners Paugh and Moss concurred. Chairman Moss agreed that this would not be a can of worms that would be easy to contain across all development standards if opened.

Commissioner Petty moved to uphold staff's denial and directed staff to draft findings and conclusions consistent with denial. Commissioner Rock seconded. A roll call vote was held.

Petty - Yes
Moss - Yes
Lyons - Yes
Paugh - Yes
Rock - Yes

Appeal of AA-23-13 (ACTION ITEM)
407 South 3rd Street – Payette Lakes Recreational Water and Sewer District
An appeal of the Administrator's decision to deny an application for administrative approval to construct a fence in the front yard of an existing residential property within the CC – Community

Commercial zone within a Scenic Route overlay zone. The property is zoned CC – Community Commercial and is more particularly described as:

McCall Acreage Tax No. 57A-3 situate in Section 16, T18N, R3E, B.M., City of McCall, Valley County, Idaho

PUBLIC HEARING

Commissioner Lyons moved to open the public hearing, Commissioner Petty seconded. Unanimous.

Jeff Bateman, District Manager at PLRWSD presented his appeal relating to the workforce housing duplex being used for On-call Sewer Staff, and a permanent staff member. While there isn't hazardous material inside the fenceline as required to allow fencing in the zone, Mr. Bateman believes there is a safety, privacy and security hazard to the tenants including children and therefore the fence can protect the tenants from any hazards off of the property. He presented some photos identifying where on the site the proposed 6-foot cedar-fence ought to go in order to make the kids be better protected from any potential weirdos looking in from the highway.

In new materials, Mr. Bateman has included the concept of a landscaped berm and would be a potential option and would be more interested in working with staff. Mr. Punkoney mentioned it may be more prudent to potentially withdraw the appeal, submit more aesthetically appealing materials and landscaping, and accomplish everybody's goals. Mr. Bateman agreed to withdraw his appeal and work with staff on an option that could meet the City and Districts needs.

No further deliberation was required.

6. OTHER

- **Select ADA Training Date – Special Meeting (ACTION ITEM):**
  - 4 hours requested by Planning Consultant Team – October 11 – 2:00-6:00pm
- **Signs approved administratively:**
- **Upcoming Meeting Agenda – October 3, 2023 – Tentative**
  - DR-23-21 – 615 Fox Ridge Rd – Single-Family Dwelling
  - DR-23-22 – 1697 Club Hill Rd – Single-Family Dwelling
  - DR-23-23 & SR-23-15 – 2326 Northshore Dr – Single-family Dwelling
  - DR-23-25 & SH-23-08 – TBD Rainbow Ln – Single-Family Dwelling
  - MPA-23-02 – 411 Railroad Ave – Depot Condominium Replat
  - CUP-23-07, DR & SH – Mile High Marina Expansion
  - ROS-23-03 – 209 Mather Rd
  - ROS-23-04 – 919 Flynn Ln

7. ADJOURNMENT

Commissioner Moss moved to adjourn the meeting – 7:47pm, Commissioner Paugh seconded. All commissioners voted aye and the meeting ended.

Signed: DocuSigned by: Robert Lyons 11F89FE13E9A402...

Robert Lyons, Chairman
McCall Area Planning and Zoning Commission

Attest: DocuSigned by: 744967029FAE4A1...

Brian Parker
City Planner

PUBLIC HEARING
SIGN IN SHEET
McCall Area Planning & Zoning Commission
September 12, 2023

NAME	Primary ADDRESS	Item Commenting On	In favor, Opposed, or Neutral
Rick Williams	11049 W Altar St Star, ID 500 & 520 1st St	PRE-APP's 23-11 & 23-12	Representative
* see below, Derritt Kerner			
Andrew Harmon	500 & 520 1st St	Pre-APP's 23-11 & 23-12	Applicant
CADE HUSKINSON	581 S Center St Wellsville Utah	Appeal of AA-23-	Applicant
JIM FRONK	14028 NORWOOD RD	Appeal of FP-DP-23-01	Rep/Env Analyst
Amy Holm		" "	REPRESENTATIVE
Derritt Kerner	9175 W Black Eagle Dr. Boise		
Judith O'Flaherty	10264 W Snow Wolf Star Id ~~to E. Park St McCall~~ ID	Appeal Lenora St	in favor of appeal
DAVID HENDERSON	1111 Knowles Rd	DR-23-20	Applicant
VINCE BEER	601 Diamond St	CUP-23-	Applicant
208-315-7677		?	
208-631-1368		?	
Jim (Guest) online	?	?	
Kelly Hill		Preapp-23-11	Representative
Colby Patchin	1207 Zachary Rd	Pre-App-23-11	Applicant
dsanders@plowsheerllc.com (online)		?	

PUBLIC HEARING
SIGN IN SHEET
McCall Area Planning & Zoning Commission
September 12, 2023

NAME	Primary ADDRESS	Item Commenting On	In favor, Opposed, or Neutral
Vince Beer	612 Diamond St	NOT	CUP (consent)
JEFF Bateman	201 Jeckt ST	Appeal AA-23-13	Applicant
Kelly Hill	312 Cedar Way	Pre-App 1207 Zachary	Representation
Cindy Saneliv3	206 Broken Creek	Appeal FPDP-23-01	Owner/Applicant
Todd			
	3241 Big Creek Rd	DR-23-20	Applicant
Amy Holm MPMPLAW	221 Morgan	Appeal of FPDP-23-01	Representative

From: CHARLES PETROCK
To: Brian Parker
Cc: Meredith Todd
Subject: Rivers Crossing Lot 19 / Block 2 / 221 Morgan Dr / Opposition to wetland modifications
Date: Tuesday, September 12, 2023 2:42:25 PM

Hello Brian.
I am responding to the public comments' opportunity for 221 Morgan Dr.
SITE DEVELOPMENT: My limited understanding is that the property is seeking to make considerable changes to the property which will affect the wetlands. In addition, I have heard they intend to build two houses on the lot and both might exceed the HOA guidelines. I do not know the owners and have no malice against their project if they meet the HOA guidelines and McCall City standards.
I have been a full-time resident of Rivers Crossing for over 5 years. I chose to live in this sub-division in part because the HOA's website and numerous HOA guidelines and other documents convey the importance to respect the surroundings and minimize disturbance of existing terrain. Such considerations follow:

EXAMPLES OF APPROPRIATENESS: A few examples from the Rivers Crossing Design Guidelines (8/17/20) include the following:
(1.2 Primary Goals) 'human scale', not dominate the terrain, 'adaptation to the site in every possible way, including winter climate, its terrain....natural vegetation'.
(1.3 Design Theme) '..establishing compatibility between well designed building and the natural environment'....residential areas should blend structures and landscape, respecting natural landforms and existing vegetation'.
(2.1a1 Building Siting) '....cohesively integrate into existing terrain.
(2.1a2 Building Siting) ' New buildings ....should be placed on the site with respect to the existing key features such as tree massing, topography, and rock outcroppings'. 'The objective is to give each house a sense of unity within its site and surroundings, providing scale to each house so as not to dominate the site'.
(2.1a3 Building Siting) 'Building siting shall be responsive to existing features of terrain, drainage patterns,.....'
(2.1a5 Building Siting) 'Buildings should step with the contours of the site'
(2.1b Grading) 'Grading should blend into natural landscape. '.....site to avoid erosion'

WETLAND AND FLOOD PLAN CONCERNS:
I often kayak from the Payette Lake Dam in McCall and I frequently use the path to the bridge to access River Front park. I have many times seen the water cover a large percentage of this property. I have seen the gravel path underwater and this property covered in water to within 200 feet of the paved parts of Morgan Drive.

Changing this flood plan could adversely affect areas up and down stream from this property. During high water it would create a bottle neck and potentially flood up river areas. Down stream it could potentially create increased erosion as the shape of the river is changed and the flow rates changed. It could potentially impact the foundation of the walk bridge. Reducing wetland area may also cause a change in habitat or vegetation as the rate water saturation and dispersion is modified.

BUILDING SQUARE FOOTAGE:
According to the Rivers Crossing Design Guidelines, "4. Estate Homes", 'The total square footage of a heated, livable space in a Single Family Structure or a Primary/Secondary Structure on an Estate Lot may not be less than 2800 nor more than 7000 square feet. Total square footage of a Secondary Structure on these Lots may not be less than 600 nor more than 750 square feet plus garage if any."

CONCLUSION/SUMMARY:
To be consistent in the manner which River Crossing defines itself to the public and within its documentation, I oppose a variance to the Wetland and I oppose any construction which does not fit the character and guidelines written and inherent to Rivers Crossing intended use and design constraints. I believe damaging the Wetlands is a disservice to McCall way of life and that oversized houses are a disservice to the character of the neighborhood. Society no knows that wetlands are an extremely important aspect of nature and human survival and we should error and defending our natural resources. Removing small chunks here and there add up.

Thank you. Charles Petrock 155 Morgan Dr.

From: Stephanie Kunkel
To: Brian Parker
Subject: Public comment Lake town 9/12
Date: Tuesday, September 12, 2023 11:17:11 AM

As the business next to Lake town, we have enjoyed the fun aesthetic they have added to our corner with the skis! As a ski town, and with the shift toward art on display in downtown McCall, we think it fits well, and we hope you will allow town to keep a great installation for all to enjoy!
Northfork Coffee

Sent from my iPad

From: lifeisariver@icloud.com
To: Brian Parker
Subject: Laketown Store Front - Cade Huskinson appeal
Date: Tuesday, September 12, 2023 12:29:04 PM

Hi Brian, just wanted to comment on the skis that Cade Huskinson put up on the Laketown building. I think they look great, and are a true representation of a local ski town rustic decor.. The Council should be impressed by Mr. Huskinson's effort to make the store front look fun and inviting! Please allow him to keep his ski decor up.

THanks,

Tricia Warren
1942 Pilgrim Cove Rd
McCall, ID 83638
lifeisariver@icloud.com
"Life is a River—Prepare to Get Wet"

McCALL AREA PLANNING AND ZONING COMMISSION

IN RE:	)	
	)	
APPEAL OF DENIAL OF FLOODPLAIN DEVELOPMENT PERMIT	)	**FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION**
	)	
Application Number: FPDP-23-01	)	

FINDINGS OF FACTS

Appellant: Dwain & Cindy Sanders

Representative(s): Amy Holm, Millemann, Pemberton & Holm

Application: An appeal of the Administrator's decision to deny a Floodplain Development Permit Application.

Location: Lot 19, Block Two of the River's Crossing Subdivision situate in the S ½ of Section 17, T18N, R3E, B.M. City of McCall, Valley County, Idaho.

Property Address: 221 Morgan Drive

Public Notices: **Newspaper:** The Notice of Hearing was published in the *Star News* on August 24, 2023

Mailing: The Notice of Hearing was mailed by the applicant to property owners within 300 feet on August 28, 2023.

Posting: The Notice of Hearing was posted by the applicant on the subject property on August 28, 2023.

Zoning: R8 – Medium Density Residential

Property Size: 5.29 acres

APPROVAL STANDARDS

Title 9, Chapter 8

Flood Control Regulations

Application Requirements: Application for a floodplain development permit shall be made to the Floodplain Administrator prior to any development activities located within special flood hazard areas. The following items shall be presented to the Floodplain Administrator to apply for a floodplain development permit:

(a) A plot plan drawn to scale which shall include, but shall not be limited to, the following specific details of the proposed floodplain development:

(1) The nature, location, dimensions, and elevations of the area of development/disturbance; existing and proposed structures, utility systems, grading/pavement areas, fill materials, storage areas, drainage facilities, and other development;

The floodplain development permit application identifies all locations and dimensions of proposed areas of fill. No other areas of development or disturbance are identified.

(2) The boundary of the special flood hazard area as delineated on the FIRM or other flood map as determined in section 9.8.032 of this chapter, or a statement that the entire lot is within the special flood hazard area;

The floodplain development permit application identifies the special flood hazard area.

(3) The flood zone(s) designation of the proposed development area as determined on the FIRM or other flood map as determined in section 9.8.032 of this chapter;

The floodplain development permit application identifies the proposed fill within the special flood hazard area.

(4) The boundary of the floodway(s) as determined in section 9.8.032 of this chapter;

The floodplain development permit application identifies the floodway boundary.

(5) The base flood elevation (BFE) where provided as set forth in section 9.8.032, 9.8.033, or 9.8.053 of this chapter;

The floodplain development permit application identifies the relevant base flood elevations.

(6) The old and new location of any watercourse that will be altered or relocated as a result of proposed development; and

The floodplain development permit application identifies the proposed modification of the special flood hazard area.

(b) Proposed elevation, and method thereof, of all development within a special flood hazard area including but not limited to:

(1) Elevation in relation to mean sea level of the proposed lowest floor (including basement) of all structures;

N/A

(2) Elevation in relation to mean sea level to which any non- residential structure in Zone A, AE, AH, AO, or A1-30 will be floodproofed; and

N/A

(3) Elevation in relation to mean sea level to which any proposed utility equipment and machinery will be elevated or floodproofed.

N/A

(c) If floodproofing, a Floodproofing Certificate (FEMA Form 086-0-33) with supporting data, an operational plan, and an inspection and maintenance plan that include, but are not limited to, installation, exercise, and maintenance of floodproofing measures will be required prior to Certificate of Occupancy/Completion.

N/A

(d) A Foundation Plan, drawn to scale, which shall include details of the proposed foundation system to ensure all provisions of this chapter are met. These details include but are not limited to:

(1) The proposed method of elevation, if applicable (i.e., fill, solid foundation perimeter wall, solid backfilled foundation, open foundation, or on columns/posts/piers/piles/shear walls);

N/A

(2) Openings to facilitate automatic equalization of hydrostatic flood forces on walls in accordance with subsection 9.8.051(A)8(b) of this chapter when solid foundation perimeter walls are used in Zones A, AE, AH, AO, and A1-30.

N/A

(e) Usage details of any enclosed areas below the lowest floor.

N/A

(f) Plans and/or details for the protection of public utilities and facilities such as sewer, gas, electrical, and water systems to be located and constructed to minimize flood damage.

N/A

(g) Certification that all other local, State, and Federal permits required prior to floodplain development permit issuance have been received.

The applicant has not received a building permit as required by McCall Code Section 3.8.02(G). Because the application has not demonstrated compliance with the Shoreline and River Environs Requirements for Development (McCall Code Section 3.7.023), a building permit cannot be issued for the proposed placement of fill.

(h) Documentation for placement of recreational vehicles and/or temporary structures, when applicable, to ensure that the provisions of subsections 9.8.052(A)5 and (A)6 of this chapter are met.

N/A

(i) A description of proposed watercourse alteration or relocation, when applicable, including an engineering report on the effects of the proposed project on the flood-carrying capacity of the watercourse and the effects to properties located both upstream and downstream; and

N/A

(j) A map (if not shown on plot plan) showing the location of the proposed watercourse alteration or relocation.

N/A

Title 3, Chapter 7, Section 2

Shoreline and River Environs Zone

No conditional use or building permit shall be issued, nor is any development, grading, or alteration of any land within this zone permitted, unless the applicant establishes to the satisfaction of the commission and council in the case of a conditional use, or of the administrator in the case of a building permit, that:

1. **The proposed development meets all applicable requirements of this title and title IX of this code.**

   The placement of fill will create harm as defined in McCall Code Section 3.7.023(C)(2) because the facts in the record show that the proposed development will involve excessive clearing of natural vegetation or change of natural land forms within the area between the water pool shore contour or high-water mark and the fifty-foot (50') setback line. Likewise, the facts in the record, and specifically the proposed plans and testimony of the applicant and City Staff show that the proposed development will involve The removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge and the filling or dredging of lake bottom or wetlands.

2. **The plans accurately identify the water pool shore contours and high-water marks, which, in the case of river environs, shall mean the limits of the area of special flood hazard. The site plan indicates the Water Pool Shore Contour elevation.** The water pool contour line is indicated on the site plan.

3. **A letter is on file from a specialist certified by the United States army corps of engineers wetlands expert that certifies that no wetlands related issues or issues related to fill of navigable waters issues were presented by the proposed development; or that a section 404 permit has been issued or is forthcoming by the corps of engineers, whichever is appropriate, city approval(s) under this title and title IX of this code are contingent upon all applicable section 404 permit requirements being met.**

The applicant has applied for a section 404 permit.

4. **The requirements of the underlying zone are met.**

   N/A

5. **The fifty-foot (50') building setback line is met per subsection (C)3(c) of this section.**

   The applicant is proposing to place fill within and across the fifty-foot (50') building setback area, in order to modify the location of said setback line.

6. **Proof of stormwater certification training has been provided by the individual applying for the building permit.** Proof of stormwater certification is required prior to issuance of a building permit.

PUBLIC COMMENTS

- Email received from Charles Petrock, dated September 12, 2023.
- Email received from James Duzak, dated September 12, 2023.

Additional Record Considered:

Application materials, including detailed proposed construction drawings and plans.

Testimony from the Applicant and the Applicant's Attorney.

Staff testimony by Brian Parker, City Planner.

CONCLUSIONS OF LAW

1. The City of McCall has provided for the processing of Floodplain Development Permit Applications, pursuant to Title 9, Chapter 8 of McCall City Code.
2. Adequate notice of the September 12, 2023 public hearing was provided, pursuant to Section 67-6512, Idaho Code and Title 3, Chapter 15 of McCall City Code.

3. The application does not meet the standards for the granting of a Floodplain Development Permit.

DECISION

THEREFORE, the McCall Area Planning and Zoning Commission hereby **upholds** the administrator's denial of the floodplain development permit application.

Findings of Fact **adopted** this 7th Day of NOVEMBER, 2023.

_____
Robert Lyons, Chair
McCall Area Planning and Zoning Commission

Attest:

_____
Brian Parker, City Planner
City of McCall

Availability of Appeal of this Determination

Pursuant to MCC 9.9.07, this determination may be appealed according to the provision of Title III, Chapter 15 of the McCall City Code as follows:

3.15.08: APPEAL OR REQUEST FOR HEARING BY AGGRIEVED PERSONS:

(A) Right To Appeal: An aggrieved person may appeal the commission decision, or request a hearing on the commission recommendation, by filing a notice of appeal or request for hearing in writing with the city clerk no later than ten (10) days after the issuance of the findings and conclusions of the commission. When such notice of appeal or request is received, proceedings before the council shall be on the record made below. A notice of appeal shall set out with particularity the decision or part thereof from which the appeal is being taken, and whether or not facts found by the commission are disputed by appellant.

(B) Time Limits For Actions: The council shall hold a public hearing on the appeal and the application appealed within forty five (45) days of the request and shall follow the hearing procedures established in section 3.15.04 of this chapter. When there is no required hearing, the council shall put the matter down on its agenda upon a date certain for the consideration of written and oral arguments; notice of such hearing shall be provided to appellant no later than fifteen (15) days before the hearing; should appellant desire to file written arguments, appellant shall do so no later than five (5) days prior to the hearing.

(C) Stay Of Proceedings: An appeal or request for hearing stays all proceedings in furtherance of the action appealed from unless, after the notice of appeal or request for hearing is filed, the council finds that by reason of the facts stated in the application, a stay would cause imminent peril to health, safety or property.

(D) Council Action: After the hearing has been held, the council may:

1. Grant or deny the appeal or the permit; or
2. Delay such decision for no longer than sixty (60) days after the hearing date for further study or hearing; provided, however, that the council must render a decision no later than sixty (60) days from the date of the hearing.

3.15.10: JUDICIAL REVIEW:

A person aggrieved by a decision under this title may, after all remedies have been exhausted under local ordinances, seek judicial review under the procedures provided by sections 67-5215(b) through (g) and section 67-5216, Idaho Code.

MILLEMANN PEMBERTON & HOLM LLP
ATTORNEYS AT LAW

Mailing Address: P.O. Box 1066, McCall, ID 83638
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TELEPHONE (208) 634-7641
FACSIMILE (208) 634-4516

NOTICE OF APPEAL

November 17, 2023

City of McCall
McCall City Clerk and Council
216 East Park Street
McCall, Idaho 83638

Re: Appeal of FPDP-23-01 Floodplain Development Permit Application for River's Crossing Lot 19 Block 2, Application filed January 23, 2023, Administrative Denial emailed March 31, 2023, Planning & Zoning Commission Findings of Fact, Conclusions of Law, and Decision upholding the Administrative Denial dated November 13, 2023

Dear Madam Clerk and Councilmembers:

On behalf of our clients Dwain and Cindy Sanders, and pursuant to McCall City Code Section 3.15.09, this letter shall serve as an appeal of the McCall Area Planning and Zoning Commission's Findings of Fact, Conclusions of Law, and Decision for the Appeal of Denial of Floodplain Development Permit Application FPDP-23-01 for River's Crossing Lot 19 Block 2, which is referred to herein as "P&Z's Denial." The Sanders request that a public hearing be set before the McCall City Council for this to be heard on January 25, 2024, or thereafter, based on the availability of the Sanders' counsel. The Sanders respectfully request that McCall City Council reverse the Planning and Zoning Commission's decision and enter findings and conclusions granting the Sanders' Floodplain Development Permit Application.

Factual Background of FPDP-23-01

Dwain and Cindy Sanders own an approximately 5.3-acre vacant lot, Lot 19 in Rivers Crossing Subdivision, that is adjacent to the North Fork Payette River (the "Property"). They applied for FPDP-23-01 on January 23, 2023, as part of the Conditional Letter of Map Revision ("CLOMR") Application process to remove a 0.48-acre portion of the 5.3-acre Property from the Special Flood Hazard Area ("SFHA"). This process, which is administered by FEMA and recognized by McCall City Code in Title IX, Section 8, allows property owners who elevate small areas of their property within the SFHA above the Base Flood Elevation to receive a letter from FEMA stating the property's changed elevation will meet minimum National Flood Insurance Program Standards. To obtain a CLOMR, the Sanders need to place fill material on 0.48 acres of the Property, of which 0.15 acres are wetlands within the SFHA. Although the remaining 0.33 acres contains no wetlands, it too is within the SFHA.

Because the fill will be placed on wetlands subject to federal jurisdiction under the Clean Water Act (CWA), the Sanders must also obtain a Section 404 permit from the United States Army Corps of Engineers ("Corps"). Section 404 of the CWA prohibits the discharge of dredged or fill material into Waters of the United States ("WOTUS"), including wetlands subject to federal jurisdiction, without a permit.[1] If a project proposes minor discharges of dredged or fill material that "will have only minimal individual or cumulative net adverse effects on the environment," the Corps may issue a Nationwide Permit.[2] Because of the length of time this process has taken, the Sanders are currently working with the Corps to either extend their original Section 404 Nationwide Permit or apply for a new one. In either case, to comply with the federal CWA, the Sanders will obtain a permit from the Corps and be subject to all of that permit's conditions prior to placing the proposed fill on the Property.

FDPD-23-01 seeks only to place fill on 0.48 acres of the Property. The Sanders do not intend at this point to build any structures, but they have applied for a building permit to protect their interest in obtaining FPDP-23-01. Although the Sander's contend that P&Z's Denial erred in requiring a building permit to merely place fill on the Property, applying for a building permit was necessary 1) to ensure all administrative remedies are exhausted in this process and 2) to preserve all the issues that are outlined in more detail below, should this appeal be denied.

Clearly, if the Sanders or any future owner of the Property desire to construct a home, a building permit would be required to ensure compliance with building standards and setbacks, including the 50-foot Shorelines and River Environs Zone setback. Moreover, assuming placing fill as contemplated in FPDP-23-01 is permitted, any future structures on the property would need to be sighted approximately 400-feet away from the North Fork Payette River—much farther away than any of the neighboring homes.

During this process, the Sanders engaged experts in wetlands and aquatic resources management to assist in designing their proposal to minimize the risk of harm and mitigate impacts to the greatest extent practicable. If allowed to proceed, and in addition to complying

[1] 33 U.S.C. § 1344(f).

[2] 33 C.F.R. § 330.1(d); *see also* 33 U.S.C. § 1344(e).

with the conditions of a Section 404 permit, the Sanders are committed to adhering to the recommendations of these experts, including use of best management practices before, during, and after placing the fill to preserve and protect water quality, aquatic resources, and the remaining 2.55 acres of wetlands on the Property.

As noted, FPDP-23-01 was filed on January 23, 2023. On March 31, 2023, the Floodplain Administrator denied FPDP-23-01. The Sanders appealed that decision before the McCall Area Planning & Zoning Commission and a public hearing was held on September 12, 2023. The Commission issued a signed Findings of Fact, Conclusions of Law, and Decision on November 13, 2023, which upheld the Administrator's Denial. The Sanders contend that P&Z's Denial erred as a matter of law and undisputed fact and is arbitrary and capricious in several significant ways, including the following:

1. P&Z's Denial misinterprets McCall City Code because it erroneously assumes that a building permit is required in addition to a floodplain development permit for the sole action of placing fill within the Shoreline and River Environs Zone to facilitate the CLOMR process.

2. The P&Z's Denial is erroneous as a matter of law because the provisions of the Shoreline and River Environs Ordinance do not apply to FPDP-23-01; and, even if found to apply, P&Z's conclusion that placing fill in wetlands unconditionally constitutes "harm," even if such fill is placed pursuant to a Section 404 permit, is erroneous as a matter of law.

3. The record establishes that placing fill as proposed in FPDP-23-01 will not cause "harm" as that term is defined in MCC 3.7.023(C)2.

4. P&Z's Denial and any decision by the City of McCall upholding P&Z's Denial violates Article XII § 2 of the Idaho Constitution and Idaho Code § 50-301 because Idaho law prohibits the City of McCall from imposing conditions that are more stringent than those required by the federal Clean Water Act.

1. A building permit is not required to obtain FPDP-23-01 because the proposed development activity is only to place fill material within the SFHA in aid of a CLOMR Application and pursuant to a Section 404 permit.

P&Z's Denial erred in requiring the Sanders to also obtain a building permit as part of the floodplain development permit application process. Title IX of the McCall City Code states that "[a] floodplain development permit shall be required in conformance with the provisions of this chapter *prior to the commencement of any development activities within the special flood hazard areas* determined in accordance with the provisions of section 9.8.043 of this chapter."[3] Under MCC 9.8.043, "[a]pplication for a floodplain development permit shall be made to the Floodplain Administrator *prior to any development activities located within special flood hazard*

[3] MCC 9.8.033.

areas," and must include, among a detailed list of other requirements, "a complete description of all development to be permitted under the floodplain development permit," which includes "dredging" and "filling," as well as "[c]ertification that all other local, State, and Federal permits required prior to floodplain development permit issuance have been received."[4]

Although P&Z's Denial properly recognized FPDP-23-01 complied with most relevant application requirements, it erred in finding that under MCC 9.8.043(A)1(g):

> The applicant has not received a building permit as required by McCall Code Section 3.8.02(G). Because the application has not demonstrated compliance with the Shoreline and River Environs Requirements for Development (McCall City Code Section 3.7.023), a building permit cannot be issued for the proposed placement of fill.

This illogical interpretation of the City Code not only renders some of its provisions in conflict with one another but reads others straight into oblivion. Such a construction of the Code leads to the ridiculous and unlawful result that within the City of McCall a property owner is *per se* forbidden from ever seeking a CLOMR if the CLOMR requires filling wetlands.

Courts generally presume validity of the actions of zoning boards, including when those boards interpret their own zoning ordinances.[5] However, when an ordinance is ambiguous—that is, subject to more than one reasonable interpretation—"[c]onstructions that would lead to absurd or unreasonably harsh results are disfavored."[6] "All sections of applicable statutes must be construed together so as to determine the legislature's intent," and be read so that "no part is rendered superfluous or insignificant."[7]

There are two incorrect interpretations of McCall City Code at issue here: A) application of the Shoreline Rivers and Environs Zone Requirements ("SREZ") for Development to FPDP-23-01, and B) application of the General Development Prohibited Uses to require a building permit for placing fill in the SFHA. Each are addressed in turn below.

A. The Shorelines and River Environs Zone Requirements for Development only apply when the applicant is "building"—in other words, constructing a "structure"—within the SFHA.

Applying the Shoreline and Rivers Environs Zone Requirements for Development to FPDP-23-01 is incorrect because those requirements only apply to the building of structures. The purpose of the SREZ is to "regulate development along and alterations of . . . the banks and immediate vicinity of the [North Fork] Payette River in order to protect and maintain water quality, fish and wildlife habitat, edge and forest habitat, vistas, and public visual and physical access."[8] "Development" for purposes of Title III, and which is also a word used extensively

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[4] MCC 9.8.043(A)2(a); MCC 9.8.043(A)1(g)
[5] *Chisholm v. Twin Falls Cnty.,* 139 Idaho 131, 136 (2003).
[6] *Payette River Property Owners Ass'n v. Bd. of Comm'rs of Valley County*, 132 Idaho 551, 557 (1999).
[7] *Friends of Farm to Market v. Valley Cnty.,* 137 Idaho 192, 197 (2002).
[8] MCC 3.7.020.

throughout Title III, is defined as "[a]ny construction or activity that changes the existing character or use of land upon which such construction or activity occurs."[9] Even so, the permitted uses in the SREZ are "[a]ll those uses permitted in the underlying zones upon which this zone is superimposed . . . provided they satisfy the special conditions set forth in this chapter, *except that . . . No building and no land filling shall be permitted within a floodway and no building within an area of special flood hazard . . .* unless the applicant complies with the standards set forth in" Title IX, Chapter 8.[10]

Thus, the SREZ Ordinance narrows the definition of "development" for activities, and specifically for activities occurring within the SFHA, to only those that involve "building." The next exception to permitted uses in the SREZ makes this point abundantly clear: "Any *structure*, wholly or partially within this zone . . . and any part of which is within" one hundred fifty feet of the highwater mark of the North Fork Payette River, "notwithstanding *that portions of the structure* are not on land that is within this zone" is subject to the SREZ Requirements for Development.

Obviously, the plain text of MCC 3.7.022(B) prohibits both "building" and "filling" activities in the floodway, but it requires compliance with Title IX, Chapter 8 for "building" within the SFHA. The ordinary meaning of the word "build" or its present participle form "building" is "to form by ordering and uniting materials by gradual means into a composite whole," such as "birds building nests" or building new houses by the river.[11] That is why one does not build fill material on wetlands, rather such material is placed on wetlands—at least in the ordinary sense of the word. The only other provision mentioning "fill" or "filling" in the SREZ Ordinance are where it defines "harm" as "filling or dredging lake bottoms or wetlands" and where it contemplates compliance with federal law with respect to WOTUS and the CWA.[12] Clearly, the ordinance recognizes a distinction between development activities that are "building" and development activities that are "filling," which is necessary because the SREZ Ordinance only applies to development activities proposing to build structures—and certainly does not categorically prohibit filling within the SHFA.

What the Sanders propose here under FPDP-23-01 involves no building of structures whatsoever, nor does it require a Conditional Use Permit. In its decision upholding the Administrator's denial, the P&Z Commission failed to abide by the Code's limit on its power because the Code provisions cited above apply the SREZ Development Requirement's "Permit Criteria" only to those activities that either require a Conditional Use Permit or a building permit for purposes of the SREZ.[13] FPDP-23-01 requires neither. Indeed, reading the specific activities ("development, grading, or alteration of any land") following the words "nor is any" in MCC

[9] MCC 3.02.02.
[10] MCC 3.7.022(B).
[11] *See* https://www.merriam-webster.com/dictionary/build.
[12] MCC 3.7.023(C)2(d).
[13] MCC 3.7.022(B) states: "*No conditional use or building permit shall be issued*, nor is any development, grading, or alteration of any land within this zone permitted, unless the applicant establishes to the satisfaction of the commission or council in the case of a conditional use, or of the administrator in the case of a building permit that" six enumerated criteria are met.

3.7.023(B) as defining the activities that require a building permit renders the critically important first part of the sentence completely out of the ordinance. That part specifically declares the limits on the commission's, council's and administrator's power as to what permits can be held subject to the SREZ Ordinance: building permits and Conditional Use Permits. P&Z's Denial enlarges the activities for which a building permit is required in the SREZ and thus aggrandizes the power of the Administrator and Commission. Neither of them had any legal right to do this because FPDP-23-01 only proposes to fill, and not build, wetlands within the SFHA. The Administrator's and Commission's legal authority stem from and are strictly limited by the language of the Code, which in this case is clear. As one notable jurist put it, the legislature "does not hide elephants in mouse holes."[14] This maxim is true because applying a law or regulation contrary to what it actually says is the essence of arbitrary government action.

Nor does the abrogation clause in MCC 9.8.035 change this result. Title IX, Chapter 8 does not "remove the necessity of compliance with any other laws, ordinances, regulations," etc. But because the development activity proposed in FPDP-23-01 is not covered by the SREZ Ordinance, there is no non-compliance issue. Furthermore, since the SREZ Ordinance does not apply, there can be no "conflict or overlap" where "more stringent or greater conditions shall control."

Finally, interpreting McCall City Code as in P&Z's Denial leads to the absurd and unreasonably harsh result that no floodplain development permit seeking to place fill in wetlands in aid of a CLOMR Application can ever be obtained—regardless of whether such wetlands are subject to federal jurisdiction and regardless of whether the applicant has a valid Section 404 Permit. Under the Administrator's and P&Z's erroneous interpretation, there simply would be no possible way to take actions that remove one's property from the SHFA in accordance with a legitimate and often used federal process—not to mention pursuant to a federal Section 404 permit—intended to assist property owners who just so happen to own low-lying property subject to an increased risk of flooding.

Because P&Z's Denial applied the SREZ Ordinance to FPDP-23-01, which seeks only to place fill material within the SFHA in aid of a CLOMR Application and pursuant to a Section 404 permit, its finding denying the permit on the basis that FPDP-23-01 failed to comply with the SREZ Requirements for Development was unlawful, and in any event, arbitrary, capricious, and not in accordance with a reasonable interpretation of the ordinance's plain text.

B. FPDP-23-01 does not require first obtaining a building permit before placing fill material in aid of the CLOMR Application process and pursuant to a 404 permit.

P&Z's Denial found that the "applicant has not received a building permit as required by McCall Code Section 3.8.02(G)." That section prohibits starting "construction work, including grading, blasting, filling, trenching, tree removal, etc." without a valid building permit. Notably, although a building permit is required for "construction work" that includes "tree removal," it is not necessary for certain "Timber Harvest" activities that that would certainly fall within the list following the word "including" in MCC 3.8.02(G). In that regard, another way to state the

[14] *Whitman v. American Trucking Ass'ns*, 531 U.S. 457, 468 (2001) (Scalia, J.)

above-noted jurist's maxim is that the greater includes the lesser, but not the other way around. In other words, while a building permit necessarily covers a broad range of construction activities, those activities individually do not trigger the requirement for a building permit. Failure to adhere to this rule caused P&Z's Denial to err by requiring a building permit for the activity proposed in FPDP-23-01.

Under McCall City Code, it is "unlawful for any person to do, or cause or permit to be done . . . any construction, improvement, extension, alteration or demolition *of any building, residence or structure, coming under the purview of this title*, within the McCall area without first procuring a permit authorizing such work to be done."[15] Of course, there is an extremely high likelihood that constructing, improving, extending, altering, or demolishing any building, residence, or structure would require undertaking activities that alter the land, such as by grading, filling, dredging, scraping, etc. But just because a building permit is required before undertaking construction of a building (the greater) that necessarily involves other activities (the lesser) in furtherance of the greater in no way leads to the conclusion that a building permit is required to conduct only the other lesser activities. This is especially true where, as here, the McCall City Code nowhere requires a building permit for the standalone activity of "filling" wetlands.

As is relevant here, a floodplain development permit is required before commencing development activity within the SFHA. There is no mention whatsoever that a building permit is also required prior to commencing development activities. True, "development activity" for the purpose of Title IX, Chapter 8 includes "[a]ny activity defined as development which will necessitate a floodplain development permit; such as: the construction of buildings, structures, or accessory structures; additions or substantial improvements to existing structures; bulkheads, retaining walls, piers, and pools; the placement of mobile homes; or the deposition or extraction of materials; the construction or elevation of dikes, berms and levees." But neither this definition, nor the definition of "development" in Title IX, Chapter 8 have anything to do with defining the activities that require a building permit. These definitions simply state when a flood plain development permit is required, not when a building permit is required, and they certainly do not define the critical question of whether a building permit is required in addition to a floodplain development permit.

The inescapable conclusion is that P&Z's Denial does not and cannot point to any provision in the McCall City Code that requires a building permit for the activities proposed in FPDP-23-01. Yes, the activity of placing fill upon wetlands if conducted in conjunction with building a residence would be covered by an issued building permit (and others such as a Section 404 permit and floodplain development permit.) But there is no construction, alteration, or demolition of a building proposed in FPDP-23-01. P&Z's Denial is unlawful because it requires a permit where no permit is required and denies FPDP-23-01 on that basis.

[15] MCC 2.1.040.

2. **The P&Z's Denial is erroneous as a matter of law and is arbitrary and capricious because it unconditionally defines placing fill in wetlands as constituting "harm" even if such fill is placed pursuant to a Section 404 permit.**

As has been argued above, a building permit is not required for the activities contemplated by FPDP-23-01, nor are the provisions of the SREZ Ordinance applicable to those activities. Without in any way waiving those arguments, even if the provisions of the SREZ Ordinance were found to be applicable to FPDP-23-01, the P&Z Commission's conclusion that any placement of fill in wetlands constitutes "harm" and therefore violates the SREZ Ordinance, regardless of whether done pursuant to a valid Section 404 Permit, is erroneous as a matter of law and arbitrary and capricious.

Unconditionally defining filling of wetlands as "harm" renders other processes contemplated and required by the McCall City Code meaningless. The SREZ Ordinance is intended to regulate development more stringently within a certain area of land adjacent to and extending away from enumerated water bodies that are "distinguishing features of this area making it a destination resort for tourists and summer residents."

The principle flaw in the aforesaid legal conclusion in P&Z's Denial is that it wholly ignores the SREZ Ordinance's Permit Criteria that require either a letter certifying "that no wetlands related issues or issues related to fill of navigable waters were presented by the proposed development; ***or*** that a section 404 permit has been issued or is forthcoming by the corps of engineers, whichever is appropriate."[16] The SREZ Ordinance and Floodplain Development Permit Ordinances both contemplate that, where federal jurisdiction exists over jurisdictional Waters of the United States ("WOTUS"), compliance with those regulations is sufficient to avoid a finding that filling of wetlands constitutes "harm" as defined in MCC 3.7.023(C)2.

Thus, a finding of harm cannot be made as to FPDP-23-01 provided that the Applicant obtains a Section 404 permit prior to the placement of the fill. Doing so would render MCC 3.7.023(B)3 superfluous. In other words, there would be no reasons to make "city approval(s) under this title and title IX of this code contingent upon all applicable section 404 permit requirements being met." If the city can simply deny a floodplain development permit application for fill or a building permit to construct a building in the SFHA even if all applicable 404 permit requirements are met, then this section of Code is just a Trojan Horse to tempt unsuspecting property owners seeking to develop property to comply with federal law only to be collaterally attacked by the City of McCall's denial of a permit that in all respects complies with federal law.

Here, P&Z's Denial upheld the Administrator's Denial because it found the proposed placement of fill will create harm as defined by McCall City Code Section 3.7.023(C)2. It listed three bases, 3.7.23(C)2b, c, and d, for finding "harm." Yet, each of these is an activity defined as a "discharge" under Section 404 federal guidelines and therefore are permitted activities subject

[16] MCC 3.7.023(B)3 (emphasis supplied).

to issuance of a Section 404 permit.[17] In this case, a Section 404 permit previously was issued, and the Sanders are currently in the process of obtaining an extension or new Nationwide Permit. Certainly, if the Section 404 permit is not issued, the City can revoke any approval to conduct development activities within the SFHA under MCC 3.7.023(B)3. And it is always the case that any applicant who caused the discharge of pollutants into WOTUS without a permit would be subject to federal enforcement actions or the citizen suit provision in the CWA. Therefore, the unconditional finding of harm has stymied all lawful procedure for FPDP-23-01 because P&Z's Denial fails to recognize the process set forth in McCall City Code for developing in the SREZ subject to a duly issued Section 404 permit.

3. **The P&Z Commission's finding that placing fill as proposed in FPDP-23-01 will cause "harm" is wholly unsupported by the record.**

The record contains no evidence that the proposed placement of fill would "harm" wetlands.[18] While P&Z's Denial dutifully regurgitates the language in MCC 3.7.03(C)2 as the reason for denying FPDP-23-01, it fails to elaborate on how it reached these conclusions other than to claim reliance on "Application materials, including detailed proposed construction drawings and plans; Testimony from the Applicant and the Applicant's Attorney; and Staff testimony by Brian Parker, City Planner."

A review of the record indicates that the only evidence provided by the City to support a finding of harm are two statements by the City Planner that "the filling of lake bottom of wetlands" is unequivocally harm and that "since they have not included what sort of building they would like to do, and are just purely placing fill, any placement of fill or modification of natural vegetation would be excessive because they are not proposing any sort of development."[19] The City Planner then concluded "that is the extent of the reasoning" to find harm.[20]

In contrast to the City's dearth of evidence, the Sanders provided a thirty-three-page expert report developed by Forsgren Associates, Inc. to analyze the extent of potential harm and outline measures to minimize any environmental harm that could be posed by the placement of the fill on the Property. Importantly, that report noted that the protection of water quality is (or would be) addressed in the conditions of the Section 404 permit and that by implementing best management practices (BMPs) FPDP-23-01 would presumptively comply with state water quality standards, including Idaho's Antidegradation Policy, by maintaining and supporting the beneficial uses designated for the section of the North Fork Payette River that runs adjacent to the Property. The report also found that the proposed BMPs would protect adjacent wetlands that would remain undisturbed and prevent impermissible runoff from occurring. Additionally, the placement of fill has been designed to protect higher functioning older forested wetlands on the

[17] *See* 40 C.F.R. § 232.2; 33 U.S.C. § 1344(f).
[18] *See Spencer v. Kootenai Cnty.,* 145 Idaho 448, 456 (2008) ("Substantial and competent evidence is less than a preponderance of the evidence, but more than a mere scintilla.")
[19] *McCall Area Planning & Zoning*, at 2:05:10 to 2:06:06, YOUTUBE (Sept. 12, 2023) https://www.youtube.com/watch?v=Q49Um0A-IZo.
[20] *Id.* at 2:06:07 to 2:06:10.

Property and will primarily impact what are characterized as scrub/shrub wetlands, which typically consist of woody vegetation that is less than six feet tall.

It is also important to recognize that the mere fact that a Section 404 permit can and will be issued for the proposed placement of fill is substantial evidence that no harm, as that term is defined by MCC 3.07.023(C)2, will occur. As stated in the previous section, that code provision primarily defines "harm" as activities that may be conducted pursuant to a Section 404 permit, which not only allows for the fill to be placed in wetlands subject to federal jurisdiction but also imposes conditions on activities conducted before, during, and after placement of the fill. Evidence of a Section 404 permit either issued or forthcoming is more than sufficient to overcome the "extent of the reasoning" provided by the City Planner to conclude that FPDP-23-01 would cause harm.

Because evidence in the record shows that no harm will be caused by FPDP-23-01, P&Z's Denial must be reversed.

4. **P&Z's Denial and any decision by the City of McCall upholding P&Z's Denial violates Article XII, § 2 of the Idaho Constitution and Idaho Code § 50-301 because Idaho law prohibits the City of McCall from imposing conditions that are more stringent than those required by the federal Clean Water Act.**

P&Z's Denial is based on the finding that FPDP-23-01 will create harm because:

> the facts in the record show that the proposed development will involve excessive clearing of natural vegetation or change of natural land forms within the area between the water pool shore contour or high-water mark and the fifty-foot (50') setback line . . . the facts in the record, and specifically the proposed plans and testimony of the applicant and City Staff show that the proposed development will involve the removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge and the filling or dredging of lake bottom or wetlands.[21]

As discussed in Section 2 above, these three bases are all activities that if occurring into WOTUS would require a Section 404 permit. However, since a Section 404 permit can be issued for the proposed dredge and fill of wetlands, FPDP-23-01 meets the requirements of the CWA to discharge dredged or fill material into WOTUS. Thus, the only way to interpret P&Z's Denial of FPDP-23-01 is as a determination that a Section 404 permit is insufficient to prevent "harm" as required by the McCall City Code. Consequently, the McCall City Code necessarily imposes conditions on the placement of fill in wetlands subject to federal jurisdiction that *are more stringent than* what is required by CWA.

The CWA sets a national floor for the control of water pollution below which "States or political subdivisions thereof" cannot go.[22] The CWA does not restrict States from allocating

[21] Appeal of FPDP-23-01 – Findings of Fact, McCall Planning and Zoning Commission, at 6 (Nov. 7, 2023).
[22] 33 U.S.C. § 1370.

water resources within their boundaries nor from regulating land use within their boundaries even if the areas regulated are also subject to CWA jurisdiction.[23] In short, although States and political subdivisions thereof are prohibited from adopting or enforcing standards or limitations respecting the "discharge of pollutants" (as that term is defined in 33 U.S.C. § 1362) into waters of the United States that are "less stringent than" the CWA, they are free to impose more onerous standards subject to the limitations of other state and federal law.[24]

In Idaho, there are two limitations on the power of a local government to impose more stringent standards than the CWA prescribes: express and implied preemption under the state constitution and Idaho Code § 50-301.

A. State law expressly preempts local governments from regulating discharges subject to the CWA more stringently than the requirements of the CWA.

Article XII, § 2 of the Idaho Constitution permits an incorporated city or town to "make and enforce within its limits, all such local police, sanitary and other regulations *as are not in conflict with its charter or with the general laws*."[25] Similarly, Idaho Code § 50-301 allows cities to exercise all powers and perform all functions of local self-government in city affairs as are not specifically prohibited by or in conflict with the general laws or the constitution of the state of Idaho." While a city's "ability to act is not confined to only those actions specifically mentioned in LLUPA," such ability is constrained when the legislature says so.[26]

With respect to the CWA, Idaho Code § 39-3601 is a general law that expressly prohibits local governments from imposing more stringent conditions than what is required by the CWA:

> It is the intent of the legislature that the state of Idaho fully meet the goals and requirements of the federal clean water act and that the rules promulgated under this chapter not impose requirements beyond those of the federal clean water act.[27]

Additionally, Idaho law provides:

> The legislature cannot conveniently or advantageously set forth in this chapter all the requirements of all of the regulations which have been or will be established under the clean water act. However, any state permitting program must avoid the existence of duplicative, overlapping or conflicting state and federal regulatory systems. Further, the board may promulgate rules to implement a state permitting program but such rules shall not impose conditions or requirements more stringent or broader in scope than the clean water act and regulations adopted pursuant thereto. Further, the department will not require Idaho pollutant discharge

[23] *Id.*; *see also Prosolino v. Nastri*, 291 F.3d 1123 (9th Cir. 2002).
[24] 33 U.S.C. § 1370.
[25] IDAHO CONST. art. XII, § 2.
[26] *Cisek v. Kootenai Cnty. Bd. of Comm'rs*, 254 P.3d 24, 32 (Idaho 2011)
[27] I.C. § 39-3601.

elimination system (IPDES) permits for activities and sources not required to have permits by the United States environmental protection agency.[28]

When the City of McCall increases the regulatory burden beyond what is required by the CWA, such as P&Z's Denial of FPDP-23-01, it renders the City's action "in conflict with . . . the general laws" of the state of Idaho. Moreover, the authority to make standards under the CWA is clearly delegated to the Board of Environmental Quality and IDEQ, not city governments. Therefore, under both Article XII, § 2 and Idaho Code § 50-301, the City of McCall has acted *ultra vires* because the legislature has limited the extent that local regulation can exceed the requirements of the CWA.[29]

B. Even if the City of McCall is not expressly preempted, it is impliedly preempted from regulating more stringently than what is required by the CWA.

The doctrine of implied preemption is a principle of long-standing in the State of Idaho. It derives from the language in Article XII, § 2 that limits the police power of local governments to making and enforcing laws that are not in conflict with laws enacted by the legislature and arises when the legislature "intend[s] to occupy the whole field" of regulation.[30]

Implied preemption occurs where, despite the lack of specific language preempting or empowering local government regulation, "the state has acted in the area in such a pervasive manner that it must be assumed that it intended to occupy the entire field of regulation."[31] Intent may be assumed where 1) state law indicates the subject matter is to be "regulated by means of one, uniform statewide scheme enabling the state to enter into meaningful interstate agreements," or 2) the laws regulating the subject matter are a "comprehensive statutory scheme" that "demands a statewide, rather than local approach."[32] Even if the ordinance and statute are identical, "it is obvious that the field sought to be covered by the ordinance has already been occupied by the state legislation."[33]

The City of McCall is impliedly preempted from more stringently regulating activities of property owners that are otherwise subject to (*i.e.*, in the same field as) the permitting requirements of the CWA. Title 39, Chapter 36 of the Idaho Code is a comprehensive legislative scheme implementing Idaho's obligations and duties under the CWA and indicates that the subject matter is to be regulated to "avoid the existence of duplicative, overlapping or conflicting state and federal regulatory systems."[34] If the City of McCall imposes more stringent conditions on property owners who are otherwise subject to the requirements of the CWA, it necessarily infringes on the State of Idaho's ability to manage and enforce the state's water quality standards in a comprehensive and statewide manner that respects the fact that water ways flow through

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[28] I.C. § 39-175B.
[29] *See Black v. Young*, 834 P.2d 304 (Idaho 1992).
[30] *See, e.g.*, *Caesar v. State*, 610 P.2d 517 (Idaho 1980); *Clyde Hess Distributing Co. v. Bonneville Cnty.*, 210 P.2d 798 (Idaho 1949).
[31] *Envirosafe Services of Idaho, Inc. v. Owyhee Cnty.*, 735 P.2d 998, 1001 (Idaho 1987)
[32] *Id.*
[33] *Id.* at 1002.
[34] I.C. § 39-175B.

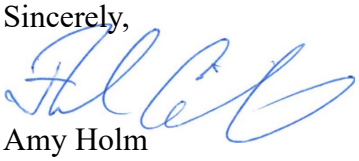
multiple jurisdictions within and outside of the state. Therefore, the City of McCall is implied preempted from more stringently regulating and thus denying FPDP-23-01 when the activities proposed in FPDP-23-01 are permitted pursuant to a validly issued Section 404 permit.

Because both the state constitution and state law prohibit the City of McCall from regulating more stringently than what is required by the CWA, P&Z's Denial of FPDP-23-01 is in violation of both constitutional and statutory provisions.

Conclusion

For the foregoing reasons, the Sanders respectfully request that the McCall City Council **REVERSE** the McCall Planning and Zoning Commission's decision and **GRANT** FPDP-23-01.

Sincerely,



Amy Holm
Steven J. Millemann
Fred Coriell

Instrument # 437938
VALLEY COUNTY, CASCADE, IDAHO
03-01-2021 13:17:16 No. of Pages: 13
Recorded for: CITY OF MCCALL
DOUGLAS A. MILLER Fee: $0.00
Ex-Officio Recorder Deputy: AMF
Electronically Recorded by Simplifile

IN RE:	)	
	)	**McCALL CITY COUCNIL**
SANDERS SETBACK VARIANCE	)	**FINDINGS OF FACT, CONCLUSIONS OF LAW, AND**
Variance	)	**DECISION**
	)	
	)	
File Number: VAR-20-01	)	

FINDINGS OF FACTS

Applicant: Dwain and Cindy Sanders

Representatives: Epikos Planning and Design

Application: A Variance and Shoreline Review application to waive the 50 foot setback requirement from the ordinary high-water mark and special flood hazard area of the North Fork of the Payette River to permit the construction of a new residence and accessory structure, which will encroach into the Area of Special Flood Hazard by more than 150 ft. The residence will be a single-story structure of 4,080 sq. ft. with an additional 3,631 sq. ft. of patios. The accessory structure is comprised of a 2,941 sq. ft. detached shop with an attached accessory dwelling unit, which will be deed restricted for local housing, totaling 747 sq. ft. with 564 sq. ft. of patios, for a total building and patio footprint on the site of 11,494 sq. ft. The development is located primarily within the special flood hazard area and of the Payette River and located entirely within the Shoreline and River Environs Zone.

Address: 221 Morgan Dr., McCall, ID 83638

Location: Lot 19, Block Two of the River's Crossing Subdivision situate in the S ½ of Section 17, T18N, R3E, B.M. City of McCall, Valley County, Idaho.

Preliminary Development Plan Review: July 7, 2020

Procedural History: During their regularly scheduled September 1, 2020 meeting, the McCall Area Planning and Zoning Commission held a properly noticed public hearing on this application. After discussion, the application and public hearing were continued until the next regularly scheduled meeting on October 6, 2020 to allow more time to gather information. The Commission also approved a motion to hold a public hearing during a site visit to the property on Friday October 2, 2020. During the October 6th meeting, the Commission discussed the site visit and deliberated on the application. A motion was made to direct staff to prepare draft findings recommending the variance application to the McCall City Council for approval; a roll call vote was held, and the motion carried with 5 ayes and 2 nays. During their regularly scheduled November 3, 2020 meeting, the McCall Area Planning and Zoning Commission voted 5 – 2, to approve the findings recommending City Council approve the variance application.

During their December 3, 2020 meeting, the McCall City Council held a public hearing on VAR-20-01. The hearing was closed, and the application was continued to the January 14th meeting to allow more time for deliberations. Following the meeting, the applicant's representative asked that the Council consider reopening the public hearing to address select new information that was introduced after the hearing was closed. The Council approved the request to reopen the hearing.

The application was noticed for the City Council's February 11, 2021 meeting date. The public hearing and new information on the project was limited to three topic areas: 1. The assertion that, through appropriate due diligence, the Sanders' should have been aware of the limited buildable area and that a

variance would be required to proceed outside of that area, 2. The assertion that granting the Variance would set a precedent for other applications. 3. The assertion that denial of the Variance Application is necessary to protect the River. Following the public hearing on February 11, 2021, the McCall City Council approved a motion to direct staff to prepare draft findings of facts and conclusions of law documents denying the variance, for review and approval during their February 25, 2021 meeting.

Public Notices: Newspaper: The Notice of Hearing was published in the Star News on August 13th, September 10th, and November 12th, 2020, as well as January 21, 2021.

Mailing: The applicant mailed the Notice of Hearing to property owners within 300 feet on August 17, September 14, and November 16, 2020, as well as January 22, 2021.

Posting: The applicant posted the Notice of Hearing on the subject property on August 18, September 16, and November 16, 2020, as well as January 22, 2021.

Zoning: R8 – Medium Density Residential

Property Size: 230,607 sq. ft. (5.29 acres)

Lot Coverage: 11,620 sq. ft. (50% of allowable)

Setbacks: Per MCC 3.3.03, the minimum setback requirements for this parcel are 20 ft. from Morgan DR., 50 ft. from the area of special flood hazard, and 15 ft. from either side property line. The applicant is proposing setbacks of more than 65 ft. from the front property line, more than 15 ft. from either side property line, and more than 400 ft. from the easterly side property line fronting the river. However, in this case the easterly side property line is not in the same location as the high water mark of the River, defined as the limits of the area of special

flood hazard (SFHA) per MCC 3.7.023B2. A significant portion of the property is located within the SFHA and the applicant is requesting a variance to not only eliminate the 50 ft. setback from the SFHA, but to construct within the SFHA as can be seen in the attached maps.

Parking: Per MCC 3.8.062 two parking spaces are required. The applicant is proposing well in excess of 2 spaces.

APPROVAL STANDARDS

Title 3, Chapter 13

Variances Authorized

(A) Duties Of Commission: The Commission will set the date for and hold a public hearing and subsequently make recommendations to the Council for approval or denial of the request in accordance with the provisions set forth in chapter 15, "Procedures, Appeals And Actions", of this title. The power to grant variances does not extend to use regulations.

During their regularly scheduled September 1, 2020 meeting, the McCall Area Planning and Zoning Commission held a properly noticed public hearing on the application. After discussion, the application and public hearing were continued until the next regularly scheduled meeting on October 6, 2020 to allow more time to gather information. The Commission also approved a motion to hold a public hearing during a site visit to the property on Friday October 2, 2020.

During the October 6th meeting, the Commission discussed the site visit and deliberated on the application. A motion was made to direct staff to prepare draft findings recommending the variance application to the McCall City Council for approval; a roll call vote was held, and the motion carried with 5 ayes and 2 nays. The findings were provided to the Commission for review and approval during their regularly scheduled November 3, 2020 meeting.

(B) Limitation On Granting: Variances shall not be granted on the grounds of convenience or profit, and hardships created by a former or present owner of the property will not justify a variance. This Commission determined that the variance was not due to convenience or profit. However, the City Council determined that because the lot still has a buildable footprint area in excess of 6,000 sq. ft., that the hardship expressed by the applicant was due to the design and location of the project on the site, which was of the property owner's own making and was not due to the lot itself.

(C) Modification Of Requirements: A variance may be granted modifying the requirements of this title respecting: lot width; lot depth; front, side, and rear yard setbacks; lot coverage; parking space; height of buildings; or other ordinance provisions affecting the size or shape of a structure or the placement of the structure upon lots, or the size or shape of lots. A variance may not be used to authorize a land use not otherwise allowed in the applicable zone or to increase the density of development beyond that which is authorized in the comprehensive plan. The applicant is proposing only a single-family residence with a single accessory dwelling unit. Therefore, the applicant is not requesting a use or density beyond what is permitted by the McCall City Code. The variance request is in regard to a property development standard (setbacks) that are described in McCall City Code 3.7.023B, that structures in the river environs zone be setback 50 ft. from the area of special flood hazard. The applicant is proposing to remove the 50 ft. setback from the Area of Special Flood Hazard to build within the Area of Special Flood Hazard. The applicant is proposing to meet all requirements of MCC 9.8 Flood Control Regulation (Overlay), which describes the specific building standards required to build within the Area of Special Flood Hazard.

(D) Granting Variances Authorized: The commission may grant variances to the regulations prescribed by this Title 3, and Title 9 of this McCall City Code, in accordance with the procedures prescribed in those chapters, with respect to any property development standard, performance standard, sign, accessory structure, wall or fence.

The variance request is in regard to a property development standard (setbacks) that are described in McCall City Code 3.7.023B, that structures in the river environs zone be setback 50 ft. from the area of special flood hazard.

(E) Varying Only To Extent Necessary: In the event that a variance is granted, the restricting zoning regulation(s) shall be varied only to the extent necessary to relieve the applicant of the immediate hardship; the existence of hardship does not confer upon the applicant a right to a variance where the function of the proposed construction can be made to conform to the requirements of this title. The Council determined that while the proposed construction could not be made to conform to the requirements of this title because the residence and accessory structure would need to be greatly reduced in size, they did determine that the lot had more than adequate space for a single family residence and garage if it were to be redesigned. They determined that the removal of the 50 ft. setback, along with permitting an encroachment of more than an additional 150 ft. into the Area of Special Flood Hazard for the two structure footprints totaling 11,000 sq. ft., was more the minimum extend necessary to relieve the applicant of the professed hardship because the lot is buildable.

(F) Imposing Conditions: In granting any variance, the Commission may prescribe appropriate conditions of approval in conformity with this title to reduce the impact of the variance. One such condition of approval shall be a stated date before which it must be exercised, or lapse.
The Council decided to deny the variance application; therefore, no conditions of approval are necessary.

Variance Standards

A variance shall not be granted unless the Commission makes specific findings of fact based directly on the particular evidence presented to it which supports conclusions that the standards and

conditions have been met by the applicant. The Commission may grant a variance only upon the following findings:

(A) Special physical conditions and circumstances applicable to the land, structure or building involved make a literal enforcement of the provisions of this title an undue hardship; provided, that:

1. **Economic hardship alone is not to be considered as an undue hardship**

   Economic factors were not a consideration in the request for the variance, nor in the Council discussion and subsequent decision to deny the variance.

2. **The special conditions and circumstances are peculiar to the land, structure or building involved, and are not applicable to other lands, structures or buildings conforming to Title 3, McCall City Code in the vicinity**

   The subject parcel is comprised heavily of wetlands, and the river's Floodway and Area of Special Flood Hazard encroach more than 500 ft. into the property, and the applicant is subject to a 50 ft. setback on top of that. Between the front, side, and shoreline setback, the applicant has stated that 97% of the lot was unbuildable without the variance.

   The Council discussed how the proposed code requirement, MCC 3.7.023, created a hardship by reducing the buildable area of the lot, but that it was not unique to this parcel. Many parcels are subject to this code requirement, although most parcel boundaries along the river are set at the edge of the Area of Special Hazard and are only subject to the 50 ft. setback. However, there are approximately a half dozen other parcels along the river in the City and Impact Area jurisdiction, that have reduced buildable areas due to the area of special flood hazard so the special conditions are not peculiar to only the subject parcel.

3. **That these special conditions and circumstances do not result from the actions of an owner of the land; provided, that for purposes of a variance as to the characteristics of a building, a subdivider who is not the applicant is not to be considered an owner for these purposes.**

   The City Council determined that because the lot still has a buildable footprint area in excess of 6,000 sq. ft., that the hardship expressed by the applicant was due to the design and location of the project on the site, which was of the property owner's own making and was not due to the lot itself, and that the lot was still buildable for a single family residence and garage.

(B) Granting the variance would preserve for such property privileges enjoyed by other property in the vicinity; provided, that:

1. **No nonconforming use of neighboring lands, structures or buildings in the same zone, and no use of lands, structures or buildings in other zones, shall be considered a privilege enjoyed by other property in the vicinity**

   The justification for the variance was not based on any nearby nonconforming uses of land.

2. **Granting the variance requested will not confer on the applicant any special privilege that is denied by this title to other lands, structures or buildings in the same zone, and affected by the same conditions and circumstances.**

   The Council determined that while the variance may not have conferred on the applicant special privilege that was denied to other property in the same zone because the majority of other lands affected by the same conditions and circumstances had been previously developed prior to the adoption of new more accurate flood maps, if the other undeveloped properties along the river with substantial floodplain were to apply for a similar variance in the future and were to be denied, then this variance application would have conferred special privileges to the subject property.

(C) *Granting the variance would not be in conflict with the public interest and will not alter the essential character of the neighborhood or violate the comprehensive plan.*

The River's Crossing HOA has submitted a letter of approval for the project and has determined that the granting of the variance will not alter the essential character of the neighborhood, which has many riverfront homes. However, the design, which includes filling of wetlands, is not in compliance with the HOA's own design guideline criteria of being setback 15 ft. from all wetlands.

Additionally, the development is not in accordance with several goals of the McCall Comprehensive Plan, including the goals to conserve significant natural areas or encouraging development that will enhance the ability of people and natural systems to withstand and recover from natural disaster and other major disturbances. Specific policies that are outlined in the Comprehensive Plan that conflict with the proposed variance are:

1. Regulate activities in natural resources areas that are deemed to be detrimental to the provision of food, water, and cover for fish and wildlife.
2. Require site evaluation for habitat, wildlife corridors, and other natural features prior to development design.
3. Encourage flexibility in the siting and design of buildings and other improvements to reduce the impact of development on environmentally sensitive areas.

DEPARTMENT/AGENCY COMMENTS

Payette Lakes Recreational Water and Sewer District (PLRWSD)

The application was distributed to the PLRWSD more than thirty (30) prior to the September 1, 2020 McCall Area Planning and Zoning Commission meeting date. In a letter dated August 3, 2020, PLRWSD stated the following:

1. There is a sewer service connection for the lot in the area of construction, the sewer service connection shall be protected from damage during construction of the proposed structures to

prevent excessive water, or debris, from entering the sewer system. Failure to do so will result in the owner/contractor being responsible for any cost incurred by the district for cleaning or removing debris that enters the sewer system.

2. Purchase of two (2) sewer connection permits will be required before a building permit is issued and construction begins.
3. Inflows of surface water and excessive infiltration are prohibited. Such prohibited sources of inflow shall include, but not be limited to, the following: Heating, cooling, or water system discharges in excess of one thousand gallons per day. Storm water connection, sub-water drains, floor drains located within garages, foundation drains, roof drains, swimming pools, street drains, basement drains, sump pumps and abandoned sewer lines.
4. The owner/contractor shall notify the district two (2) business days before connection to the sewer stub.

<u>McCall City Engineer</u>

In an email dated August 25, 2020, the City Engineer made the following comments:

The City has completed a preliminary engineering review of the land use applications. Given that the proposed development is contingent upon the Planning and Zoning Commission's determination of if a Variance can be approved for this project, this review is cursory and is not intended to be comprehensive of all engineering issues that need to be finally addressed. Accordingly, we have prepared the following comments, respectfully:

Grading, Drainage and Stormwater Management:

1. The submitted stormwater application identifies that the project proposes to construct approximately 17,823 square feet of impervious area. A stormwater report, prepared in accordance with the City's drainage management guidelines to include sections A, B, C, D, E, and F is required.

2. The proposed stormwater plan (Sheet C2.1) identifies two principal drainage areas. Treatment of the water quality event appears to be accomplished by a series of retention basins and vegetative buffers where stormwater is not directed into basins as the permanent best management practices (BMPs). This approach to managing stormwater is consistent with the City's DMGS, however, the stormwater drainage report (see #1 above) shall provide additional details regarding the sizing of the basins, management of roof runoff, sizing of conveyance facilities (if any) and other temporary and permanent BMPs that may be necessary to insure the project does not impact adjacent properties and/or aquatic habitat (i.e. wetlands, river, etc.).

Floodplain Development Permit:

1. The applicant has submitted a floodplain development permit application. On 7/16/20, the City's floodplain administrator (Morgan Bessaw) and Interim City Engineer (Nathan Stewart) spoke with Jim Fronk to discuss, in detail the requirements for the City's floodplain permitting process. Staff explained that various submittals (e.g. elevation certificates) will be required at different stages of the project (design, construction, post-construction as-builts). The City will work with the applicant, pending variance approval, to specify floodplain permit requirements necessary for final engineering approval in subsequent correspondence.
2. Our initial review of the site utility plans, foundation details, and floodplain development permit application indicate that this project may comply with the City's Flood Control Regulations (§.9.8).

Additional Items:

1. The application submittal did not include a site utilities plan. This plan is required to identify all utilities (water, sewer, power, communication, etc.) proposed for the project and how they are routed through the property from their origin within the Morgan Drive ROW. Particularly, the location of the water meter and the size of the desired water meter shall be identified.

2. The proposed bridge structure shall be designed by a licensed structural engineer and an appropriate design submittal shall be provided to the City's building official for review and approval as part of the building permit for the residential structure.
3. The application presents and describes that wetland impacts will occur as part of this proposed development. Accordingly, approval from the US Army Corps of Engineers and the State of Idaho (via the Joint Application for Permits process) shall be contingent of any City engineering approvals for this project.

As previously stated, this engineering review #1 is considered preliminary. Should the variance application be granted, the City will work with the applicant and their design team to provide additional review and comment to facilitate the final engineering review of this project.

US Army Corps of Engineers

In a letter dated September 1, 2020, the US Army Corps of Engineers stated that the applicant was approved for a Nationwide Permit.

CONCLUSIONS OF LAW

1. The City of McCall has provided for the processing of Variances, authorized by Section 67-6516, Idaho Code, pursuant to Title 3, Chapter 13 of McCall City Code.
2. Adequate notice of the September 1, October 2, and October 6, and December 3, 2020 and February 11, 2021 public hearings were provided, pursuant to Section 67-6516, Idaho Code and Title 3, Chapter 15 of McCall City Code.

DECISION

THEREFORE, the McCall City Council hereby **denies** this Variance (VAR-20-01) application.

Regulatory Taking Notice: *Denial of a Variance application, or approval of a Variance application with conditions unacceptable to the landowner, may be subject to the regulatory takings analysis provided for by Section 67-8003, Idaho Code.*

Findings of Fact **adopted** this 25th day of FEBRUARY 2021.

Robert S. Giles, Mayor

Attest:

BessieJo Wagner, City Clerk

STATE OF IDAHO,)
: ss:
County of Valley)

On this 25 day of February, 2020, before me, a Notary Public, appeared ROBERT S. GILES and BESSIEJO WAGNER, known, or identified to me to be the MAYOR and CITY CLERK, respectively, of CITY OF MCCALL that executed the said instrument, and acknowledged to me that they executed the same on behalf of THE CITY OF MCCALL.

(SEAL) SARAH EDSON NOTARY PUBLIC - STATE OF IDAHO COMMISSION NUMBER 20200108 MY COMMISSION EXPIRES 1-10-2026

Notary Public for Idaho
McCall

City of McCall
216 East Park Street
McCall, Idaho 83638
P.208.634.7142

RECEIVED JUL - 1 2020 BY:

LAND USE APPLICATION

City of McCall COMMUNITY DEVELOPMENT

Date Received: _____

Fees Paid: _____

NOTICE OF ADDITIONAL FEES

Land use applications may be subject to engineering and legal review for purpose of addressing compliance and conformance issues. The City of McCall reserves the right to contract these services to private firms. The costs of these reviews are passed on to the applicant. These fees are separate, and in addition to, the City's application and permit fees. Completion of this application signifies consent to these fees.

Please check all that apply:

- ☐ #_____ Record of Survey (ROS) - $420
- ☐ #_____ Design Review (DR) - $300 + $25/1,000 sq. ft. of new construction (rounded to the nearest 1,000)
- ☐ #_____ Scenic Route (SR) - $300
- ☒ # SH-20-03 Shoreline or River Environs (SH) - $300
- ☐ #_____ Conditional Use Permit (CUP) - $600
- ☐ #_____ Administrative Approval (AA) - $50
- ☐ #_____ Planned Unit Development (PUD) General Plan - $2,000 + $75/lot or unit
- ☐ #_____ Planned Unit Development (PUD) Final Plan - $500 + $75/lot or unit
- ☐ #_____ Subdivision (SUB) Preliminary Plat - $2,500 + $75/lot or unit
- ☐ #_____ Subdivision (SUB) Final Plat - $1000 + $75/lot or unit
- ☐ #_____ Minor Plat Amendment - $1,000
- ☒ # ~~PAID PREV.~~ Variance (VAR) - $1,000 VAR-20-01
- ☐ #_____ Rezone (ZON) - $1,500
- ☐ #_____ Zoning Code Amendment (CA) - $750/title
- ☐ #_____ Annexation - $3,000
- ☐ #_____ Vacation (VAC) - $750

Incomplete applications cannot be accepted by the City. Unless otherwise exempted by the Administrator, all Application Requirements must be provided at the time of submission. Please refer to specific application info sheets for more details.

PROPERTY OWNER INFORMATION

Property Owner 1: DWAIN AND CINDY SANDERS Email: PLOWSHEERLLC@GMAIL.COM

Mailing Address: 106 E. PARK ST, SUITE 214 Phone: 209-480-0340

Property Owner 2 *(If Applicable)*: _____ Email: _____

Mailing Address: _____ Phone: _____

AGENT/AUTHORIZED REPRESENTATIVE INFORMATION

Applicant/Representative: EPIKOS LLC Email: LBECKE@EPIKOSDESIGN.COM

Mailing Address: PO 2490 MCCALL Phone: 208-634-4540 x702

PROPERTY INFORMATION

Address(es) of Property: 221 MORGAN DR.

Legal Description of Property: LOT 19 RIVERS CROSSING, BLOCK 2

Zoning District of Property: RR Project Sq. Footage *(If Applicable)*: 5.3 ACRES (230,607 S.F.)

Impact Area ☐ City Limits ☒ Residential ☐ Commercial ☐

LAND USE APPLICATION CONTINUED

Payette Lakes Water and Sewer District ☒ or Septic System ☐ or not applicable ☒

PROJECT DESCRIPTION

Explain the general nature of what is proposed: *(please attach supplemental information if needed)*

PLEASE REFER TO ATTACHED NARRATIVE.
LOT 19 RIVER'S CROSSING: RIVER ENVIRONS APPLICATION FOR NEW RESIDENTIAL CONSTRUCTION + VARIANCE REQUEST RELATING TO RIVER ENVIRONS CODE CONFLICT.

SIGNATURES

The Applicant hereby agrees to pay reasonable attorney fees, including attorney fees on appeal and expenses of the City of McCall, in the event of a dispute concerning the interpretation or enforcement of the Land Use Application in which the City of McCall is the prevailing party.

I certify that I have reviewed and understand the procedures and requirements of the McCall City Code. I give permission for City staff and/or Planning & Zoning Commission members to view and enter the subject property in order to fully review this application. I understand that failure to provide complete and accurate information on this application may lead to denial of this application.

Cynthia Sanders
Property Owner 1

Cynthia Sanders
Signature

Property Owner 2 *(If Applicable)*

Signature

LISA BECK
Agent/Authorized Representative

Signature

FOR RECORD OF SURVEY APPLICATIONS ONLY: STATEMENT OF EASEMENT DISCLOSURE

Surveyor

Signature

I hereby certify that I have performed a thorough search for all relevant easements that relate to the subject property and have indicated or referenced these by their instrument number on the provided survey.

NARRATIVE IN SUPPORT OF VARIANCE APPLICATION
DWAIN AND CYNTHIA SANDERS
LOT 19, BLOCK 2, RIVERS CROSSING SUBDIVISION

The Application seeks a variance from the setback proscribed by MCC 3.7.023,B(2) in the Shoreline and River Environs Ordinance to allow for the construction of a home within the most recently FEMA designated Special Flood Hazard Area and an accessory structure within fifty (50) feet of the Special Flood Hazard Area.

The Applicants' own a 5.3 acre riverfront Estate Lot in Rivers Crossing. They have been working with the Public Works Department, Epikos and Jim Fronk for the last two years to design a home and separated garage/shop/apartment. The site improvements have been designed and structural plans are well underway. Design Review approval from the Rivers Crossing Owners Association is in process. The design and site selection allow for the home to be screened from both the street and the Payette River, while still assuring that the structures as designed will be setback at least 480 feet from the River.

The variance is required to address the extreme hardship caused by the conflict between the the amendment in 2006 of the definition of "stream high water mark" in the Shoreline and River Environs Ordinance and the provisions of the Flood Control Regulations Overlay (Title 9, Chapter 8 of the McCall City Code), which was adopted by the City in 2019. The proposed construction is clearly allowed under the McCall Flood Regulations Overlay Ordinance, which allows construction within the Special Flood Hazard Area. However, under the 2006 amendment to the Shoreline and River Environs Ordinance "stream high water mark" is defined as the upland limit of the Special Flood Hazard Area. As a result, the improvements would have to be setback 50 feet from the upland limit of the Special Flood Hazard Area.

Thus, what is expressly allowed in the recently adopted Flood Regulations Overlay Ordinance runs contrary to the setback proscribed by the Shoreline and River Environs Ordinance. If the 50-foot setback from the "stream high water mark" as therein defined is applied to the Applicants' 230,607 square foot Estate Lot (along with the Rivers Crossing internal setbacks) the improvements would have to be set back *approximately 565 feet from the River and the buildable area of the lot is reduced to 6,415 square feet, or roughly 2.8% of the lot.* It is simply not possible to construct the improvements, or anything remotely resembling the proposed improvements, within this building area.

This internal conflict was only discovered by City Staff and the Applicant as the Applicants' representatives approached the actual submittal of the Shoreline Environs Application. It is believed that the consequence of this internal conflict was unintended. In 2006, the FEMA mapping did not distinguish between or separately designate "Floodway" from "Floodplain", nor did it contain the elevations, gradient and detail on which the 2019 FEMA Mapping is based. This detail provided the basis for the conclusion, as incorporated into the City's 2019 Flood Regulations Overlay Ordinance, that construction can be safely undertaken in the Special Flood Hazard Area.

The Application meets the standards of M.C.C. 3.13.021, governing variances. This is not a

matter of mere economic hardship. To the contrary, the variance addresses the hardship of otherwise having over 97% of the Lot be unbuildable. Additionally, it appears that the circumstances underlying this Application are unique to this Lot and are not shared by other lots in the vicinity. Lastly, the underlying circumstances are not the result of any actions of the Applicants.

SUPPLEMENTAL NARRATIVE IN SUPPORT OF VARIANCE APPLICATION
DWAIN AND CYNTHIA SANDERS
LOT 19, BLOCK 2, RIVERS CROSSING SUBDIVISION
(VAR-20-01, SH-20-03)

This Supplemental Narrative addresses two issues which have arisen in the Planning and Zoning Commission's review of the Variance and Shoreline and River Environs Applications: (i) The intent and significance of FEMA's Special Flood Hazard Area designation; and, (ii) the issue of the filling of wetlands.

1. **The Special Flood Hazard Area ("SFHA")**:

The SFHA is defined both by FEMA and by the City in Title 9, Chapter 8 of the McCall City Code (Flood Control Regulations Overlay) as an area having a 1 percent chance of being inundated by flood waters in any given year. However, it is critical to understand that this risk is eliminated by proper construction standards, which are required both by the federal regulations governing the SFHA designation and by MCC Title 9, Chapter 8. To suggest that the SFHA designation is intended to bar development in the area is flatly in error. The federal regulations governing the SFHA designation not only allow for development within the SFHA, but clearly contemplate that such development can safely occur.

As stated on the FEMA Map Information eXchange (FMIX):

> "FEMA believes that strong State and local building codes represent the best practices in disaster-resistant construction and are critical for effective mitigation. FEMA's Flood Insurance and Mitigation Administration is actively involved in monitoring the Nation's building codes and participating in the development of higher standards…The NFIP floodplain management requirements for properties within special Flood Hazard Area's (SFHAs) are designed to prevent new development from increasing the flood threat *and to protect new and anticipated buildings from anticipated flood events.*"

The federal regulations which govern the SFHA designation contain the NFIP floodplain management requirements and construction standards for residential and nonresidential development in the SFHA. These include the following requirement for residential construction:

> (2) Require that all new construction and substantial improvements of residential structures within Zones A1-30, AE and AH zones on the community's FIRM have the lowest floor (including basement) elevated to or above the base flood level, unless the community is granted an exception by the Federal Insurance Administrator for the allowance of basements in accordance with § 60.6 (b) or (c).
>
> CFR Title 44, Chapter 1, Subchapter B, Part 60, §60.3(c)(2).

In 2019, McCall followed up on these regulations by adopting Title 9. Chapter 8, which requires residential construction in the SFHA to be at least two feet above the base flood elevation or, where no BFE has been established, two feet above adjacent grade.

Thus, both the federal NFIP Regulations and McCall City Code contemplate that a residence can be safely constructed in the SFHA without risk of flooding.

2. Wetlands:

Concern has been expressed that the provisions of the Shoreline and River Environs Code can be read to prohibit the filling of wetlands anywhere within the Shoreline and River Environs Zone. It is however very important to recognize that this is a subject which is under the jurisdiction of the federal government under the Clean Water Act, specifically the Army Corps of Engineers. The Corps has issued a "Nationwide Permit" for the minimal wetlands disturbance associated with the Sanders project. The Permit confirms that only .15 acres of wetlands will be impacted for the construction of the building pad.

The argument can certainly be made that, by the adoption of the Clean Water Act and extensive body of federal regulations applying the Act, the federal government has "pre-empted" the subject of wetlands impacts. [1] The consequence of pre-emption would be that conflicting State or Local Ordinances are invalid. However, for two reasons, it is not necessary to resolve the issue of pre-emption in order to approve the Sanders' Applications.

First, it is possible to reconcile the federal jurisdiction under the Clean Water Act with the City Code provisions, to avoid any conflict. This can be done by simply making the reasonable inference that the Shoreline Environs Ordinance's reference to filling wetlands refers to the filling of wetlands *without a Permit from the A.C.E.* The Army Corps' willingness to declare that the disturbance of .15 acres of wetlands falls under a Nationwide Permits is noteworthy. In its September 15, 2020 Proposal to Reissue and Modify Nationwide Permits, the Corps states as follows regarding Nationwide Permits (NWP's):

> We are proposing these modifications to simplify and clarify the NWPs, reduce burdens on the regulated public, and continue to comply with the statutory requirement that these NWPs authorize only activities with no more than minimal individual and cumulative adverse environmental effects.

Thus, the conclusion that the minimal disturbance of .15 acres of wetlands contemplated by the Sanders will not cause "harm" to the Shoreline Environs Overlay Zone and is therefore not prohibited by the subject Code provisions would, under these circumstances, be a reasonable interpretation and application of the Code.

The second way to address this concern without resolving the issue of whether the federal government has completely preempted the area of filling wetlands would be to include this issue as one of the Code standards to which a variance is being granted. The fact of the minimal contemplated wetlands disturbance is transparent in the Application maps and materials. The Planning and Zoning Commission's public hearing process is still underway. Under these circumstances, the amendment of the Application to include this issue would not be improper.[2]

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[1] See, for example *Boundary Backpackers v. Boundary County*, 128 Idaho 371, 913 P.2d 1141 (1986) and *Envirosafe Services of Idaho, Inc. v. the County of Owyhee*, 112 Idaho 687, 735 P.2d 998 (1987).

[2] See *Neighbors for a Healthy Gold Fork v. Valley County,* 145 Idaho 121, 176 P.3d 126 (2007).

SANDERS RESIDENCE

PROJECT DESCRIPTION

221 MORGAN DRIVE
MCCALL, ID 83638

GENERAL NOTES

THIS SET OF DRAWINGS IS THE SHELL PACKAGE COVERING FOUNDATION, FRAMING, AND EXTERIOR FINISHES. ALL INTERIOR FINISHES, MILLWORK, CASEWORK, EXPOSED MECHANICAL AND ELECTRICAL WORK, ETC. WILL BE INCLUDED IN THE FINISH PACKAGE TO FOLLOW. ALL FINISH ITEMS IN THIS PACKAGE ARE FOR INFORMATION ONLY AND MAY CHANGE.

ALL DIMENSIONS ARE TO FACE OF STUD OR CONCRETE, U.O.N. ALL EXTERIOR WALLS TO BE 5 1/2" WIDE, U.O.N. ALL INTERIOR WALLS ARE 3 1/2" WIDE, U.O.N.

GANG TOGETHER VENT STACKS AS MUCH AS POSSIBLE TO MINIMIZE ROOF PENETRATIONS.

PROVIDE ELECTRICAL HEAT TAPE FOR ALL GUTTERS, DOWNSPOUTS AND OTHER PIPES AS REQUIRED.

SEE ELEVATIONS FOR TOP OF WINDOW HEIGHTS. TOP OF WINDOW DOES NOT INCLUDE ROUGH OPENING.

DOOR SCHEDULES ON THIS SHELL PACKAGE SET INDICATE SIZE AND TYPE FOR FRAMING INFORMATION ONLY. REFER TO THE FINISH PACKAGE FOR FURTHER INFORMATION ON WOOD SPECIES, FINISHES, AND SPECIAL REQUIREMENTS.

COORDINATE ALL INTERIOR NON-STRUCTURAL DROPPED CEILINGS WITH THE FINISH PACKAGE.

COORDINATE ALL MECHANICAL AND ELECTRICAL EQUIPMENT AND ACCESS PANELS WITH ARCHITECT PRIOR TO INSTALLATION.

CONTRACTOR TO COORDINATE ALL DESIGN/BUILD MECHANICAL AND ELECTRICAL EQUIPMENT, DEVICES AND WORK. SUBMIT DRAWINGS FOR REVIEW BY ARCHITECT AND PEER CONSULTANT.
REFER TO PROJECT MANUAL DIVISION 15 AND 16.

RESIDENTIAL GENERAL NOTES, IF APPLICABLE

ALL WORK TO COMPLY WITH THE 2012 I.R.C. EDITION AND LOCAL CODES

DRAINAGE WATER SHALL BE DIRECTED TO THE STREET OR TO AN APPROVED DRAINAGE COURSE BUT NOT ONTO NEIGHBORING PROPERTIES. THE GRADE SHALL FALL A MINIMUM OF 6 INCHES WITHIN THE FIRST 10 FT. I.R.C. R401.3

EXCAVATIONS, FILL, CUTS, AND GRADING SHALL COMPLY WITH I.R.C. CHAPTER 4

FOUNDATION NOTES
FOOTINGS SHALL BE A MINIMUM OF 36 INCHES BELOW FINISH GRADE. I.R.C. R403.1.4

TOP OF FOUNDATION WALLS SHALL BE A MINIMUM 6 INCHES ABOVE ADJACENT FINISH GRADE. I.R.C. R404.1.6

UNDERFLOOR VENTILATION: MINIMUM 1 SQ. FT. FOR EACH 150 SQ. FT. OF UNDERFLOOR AREA, OR 1:1,500 IF 6 MIL VISQUEEN IS PROVIDED ON THE GROUND. VENTS TO BE ARRANGED TO PROVIDE CROSS-VENTILATION ON AT LEAST TWO OPPOSING SIDES. I.R.C. R408

ARCHITECTURAL NOTES
TEMPERED GLASS SHALL BE PROVIDED IN FRAMELESS GLASS DOORS, GLASS IN DOORS, GLASS WITHIN A 24" ARCH OF DOORS, GLAZING LESS THAN 60" ABOVE A WALKING SURFACE THAT IS WITHIN 5 FT. OF SPAS OR POOLS, CERTAIN FIXED GLASS PANELS, AND SINGLE GLAZED OPENINGS SUBJECT TO HUMAN IMPACT. I.R.C. R308

PROVIDE NOT LESS THAN 1/2 INCH GYPSUM BOARD ON THE GARAGE SIDE OF THE WALL AND CEILING SEPARATING A GARAGE AND A DWELLING. WHERE THE SEPARATION IS A FLOOR-CEILING ASSEMBLY, THE STRUCTURE SUPPORTING THE SEPARATION SHALL BE PROTECTED WITH NOT LESS THAN 5/8 INCH TYPE X GYPSUM BOARD ON THE CEILING. I.R.C. R309.2

PROVIDE 24 INCH ON-CENTER BLOCKING FOR VERTICAL SIDING. I.R.C. TABLE R703.4 FOOTNOTE K

ELECTRICAL NOTES
ALL WORK TO COMPLY WITH THE 2012 I.R.C. EDITION AND LOCAL CODES.

ALL RECEPTICALS SERVING KITCHEN, IN GARAGES, BATHS, UNFINISHED BASEMENTS AND OUTSIDE RECEPTICLES SHALL BE GFCI PROTECTED. I.R.C. E3802

LIGHTS IN CLOSETS MUST COMPLY WITH THE CLEARANCE DIMENSIONS OR I.R.C. E3903.11

ELECTRICAL PANELS MUST COMPLY WITH I.R.C. E3305 FOR 30"X36" WORKING SPACE AND 6'-6" HEADROOM.

PROVIDE SMOKE DETECTORS CONFORMING TO I.R.C. SECTION R317. ALL LEVELS, ALL BEDROOMS, ACCESS TO ALL BEDROOMS AND IN ALL ROOMS WITH SLOPED CEILINGS NEXT TO HALLS SERVING BEDROOMS. ALL DETECTORS SHALL BE HARD-WIRED, INTERCONNECTED, AND HAVE BATTERY BACKUP. I.R.C. R317

PROVIDE AT LEAST TWO OUTSIDE GRADE LEVEL RECEPTACLES-ONE IN THE FRONT YARD AND ONE IN THE REAR YARD. I.R.C. E3801.7

CARBON MONOXIDE DETECTORS SHALL BE INSTALLED ON EACH HABITABLE LEVEL OF A DWELLING UNIT EQUIPPED WITH A FUEL BURNING APPLIANCE. I.R.C. R313.2 AS AMENDED BY STATE.

ALL EXTERIOR LIGHT FIXTURES SHALL BE SHIELDED TO ELIMINATE ANY DIRECT LIGHT AND VISUAL IMPACT.

EXTERIOR LIGHTING TO COMPLY WITH COUNTY ORDINANCES FOR EXTERIOR LIGHTING.

ROOF TOP EQUIPMENT INCLUDING SATELLITE DISHES, ANTENNAS, AND OTHER ELECTRICAL EQUIPMENT MUST BE CONCEALED FROM PEDESTRIAN AND OVERLOOKING DEVELOPMENT VIEWS.

ALL OUTDOOR EQUIPMENT FOR SPA SHALL BE SCREENEDFROM VIEW WITH DESIGNED ELEMENTS OR LANDSCAPING.

PLUMBING NOTES (see also mpe notes)
ALL WORK TO COMPLY WITH THE 2012 I.R.C. EDITION AND LOCAL CODES.

PROVIDE LOCATION OF GAS AND ELECTRICAL METERS IN AN AREA THAT IS PROTECTED FROM SNOW AND ICE DAMAGE. LMC 15-2-3-4

PROVIDE TANK TYPE WATER CLOSETS WITH A FLOW RATE OF NOT MORE THAN 1.6 GALLONS PER FLUSH. I.R.C. P2903.2

PROVIDE SHOWERHEADS WITH A FLOW RATE OF NOT MORE THAN 2.5 GPM. I.R.C. P2903.2

PROVIDE NON-FREEZE TYPE BACKFLOW PREVENTER HOSE BIBS. I.R.C. P2903.2

ALL PLUMBING VENTS THROUGH THE ROOF TO BE MINIMUM 3" PIPE, 10' FROM EAVES AND BLEND WITH ROOFING COLOR(S). I.R.C. P3103.2

PROVIDE A FLOOR DRAIN BY THE WATER HEATER. PROVIDE A METAL PAN UNDER THE WATER HEATER OR STEAM SHOWER EQUIPMENT IF LOCATED ON A WOOD FLOOR. I.R.C. P2801

IN SEISMIC DESIGN CATEGORIES C1, D1, AND D2, WATER HEATER SHALL BE ANCHORED OR STRAPPED IN THE UPPER THIRD OF THE APPLIANCE TO RESIST A HORIZONTAL FORCE EQUAL TO ONE THIRD OF THE OPERATING WEIGHT.

IF BUILDING WATER SUPPLY LINE HS PRV VALUE INSTALLED WITHOUT THERMAL BY-PASS, PLUMBING CONTRACTOR SHALL INSTALL DIAPHGRAM EXPANSION TANK EQUAL TO THERM-X-CONTROL MODEL ST-25V.

MECHANICAL NOTES
ALL WORK TO COMPLY WITH THE 2012 I.R.C. EDITION AND LOCAL CODES.

PROVIDE A COMFORT HEATING SYSTEM CAPABLE OF MAINTAINING 68 F AT A POINT 36 INCHES ABOVE THE FLOOR IN ALL ROOMS. GENERALLY EQUIPMENT CANNOT BE INSTALLED IN SLEEPING ROOMS OR BATHROOMS. I.R.C. G2406

PROVIDE COMBUSTION AIR FOR ALL FUEL-BURNING APPLIANCES AT A MINIMUM RATE OF 1 SQ. INCH PER 3000 BTU/HOUR INPUT. THE ONE OPENINING MUST BE IN THE TOP 12 INCHES OF THE ROOM. PROVIDE MINIMUM 1 INCH CLEARANCE AROUND EQUIPMENT AT SIDES AND REAR OF THE APPLIANCE. PROVIDE MINIMUM 6 INCH CLEARANCE IN FRONT OF THE APPLIANCE. I.F.G.C. 304.6.2

FUEL-BURNING APPLIANCES, INCLUDING FIREPLACES, ARE NOT PERMITTED TO BE INSTALLED IN SLEEPING ROOMS, BATHROOMS, OR TOILET ROOMS UNLESS THE APPLIANCES ARE DIRECT VENT APPLIANCES. SEE I.R.C. SECTION G2406 AND I.M.C. 303.3 FOR MORE INFORMATION AND THE LIST OF EXCEPTIONS.

FUEL-FIRED WATER HEATERS SHALL NOT BE INSTALLED IN A ROOM USED AS A STORAGE CLOSET. NON-DIRECT-VENT WATER HEATERS LOCATED IN A BEDROOM OR BATHROOM SHALL BE INSTALLED IN A SEALED ENCLOSURE SO THAT COMBUSTION AIR WILL NOT BE TAKEN FROM THE LIVING SPACE. I.R.C. M2005.2

APPLIANCES HAVING AN IGNITION SOURCE SHALL BE ELEVATED SUCH THAT THE SOURCE OF IGNITION IS NOT LESS THAN 18 INCHES ABOVE THE FLOOR IN GARAGES. ROOMS OR SPACES THAT ARE NOT PART OF THE LIVING SPACE OR A DWELLING UNIT AND THAT COMMUNICATE WITH A PRIVATE GARAGE THROUGH OPENINGS SHALL BE CONSIDERED TO BE PART OF THE GARAGE. I.R.C. M1307.3

ENERGY CODE:
BUILDING ENVELOPE MUST COMPLY WITH CURRENT ENERGY CODE.

LIGHTING AND MECHANICAL SYSTEMS MUST COMPLY WITH CURRENT ENERGY CODE.

50% OF LAMPS IN PERMANENT FIXTURES MUST BE HIGH EFFICACY LAMPS.

UNVENTED CRAWLSPACE CONTINUOUS VAPOR RETARDER SHALL BE INSTALLED OVER EXPOSED EARTH WITH JOINTS OVERLAPPED BY 6" AND SEALED, EXTENDING ATLEAST 6" UP AND ATTACHED TO WALL.

SUPPLY DUCTS IN ATTICS ARE INSULATED TO GREATER OR EQUAL TO R8. ALL OTHER DUCTS IN UNCONDITIONED SPACES OR OUTSIDE THE BUILDING ENVELOPE ARE AT LEAST R6. SEAL JOINTS AND SEAMS OF ALL DUCTS.

CIRCULATING SERVICE HOT WATER PIPES ARE INSULATED TO R2.

AUTOMATIC OR GRAVITY DAMPERS ARE INSTALLED ON ALL OUTDOOR AIR INTAKES AND EXHAUSTS.

WOOD BURNING FIREPLACES SHALL HAVE GASKETED DOORS AND OUTDOOR COMBUSTION AIR.

PRESCRIPTIVE ENERGY CODE:
CLIMATE ZONE 6. REFER TO IECC 2012, TABLE R402.1.1

FENESTRATION (U-FACTOR): U-0.32

CEILING (R-VALUE): R-49. ALTERNATE-R-38 SHALL BE DEEMED TO SATISFY THE REQUIREMENT FOR R-49 WHEREVER THE FULL HEIGHT OF UNCOMPRESSED R-38 INSULATION EXTENDS OVER THE WALL TOP PLATE AT THE EAVES. IECC 2012, R402.2.1

CEILINGS WITHOUT ATTIC SPACE (R-VALUE): R-30. UNLESS SHOWN OTHERWISE. THE MINIMUM REQUIRED INSULATION FOR SUCH ROOF/CEILING ASSEMBLIES SHALL BE R-30. THIS REDUCTION OF INSULATION IS LIMITED TO 500 SQ.FT. OR 20% OF THE TOTAL INSULATED CEILING AREA, WHICHEVER IS LESS. IECC 2012, R402.2.2

WALLS (R-VALUE): R-20 + R-5 (OR R-13 + R-10, WHERE R-13 IS CAVITY INSULATION & R-10 IS CONTINUOUS INSULATION)

SLAB (R-VALUE & DEPTH) R-1 0 @ 4'-0"

THE BUILDING THERMAL ENVELOPE SHALL MEET THE REQUIREMENTS OF SECTION R402.1.1 THROUGH R402.1.4 (IECC 2012)

INDEX TO DRAWINGS

ARCHITECTURAL DRAWINGS:

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CONTACT:

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CONTACT: JAKE TIMMONS
jake@riverstonesc.com

PROJECT DATA

CODE INFORMATION:

DESIGN CODE: 2012 IRC
OCCUPANCY: R-3
CONSTRUCTION TYPE: V-B

LOCATION:

221 MORGAN DRIVE
MCALL, ID 83638

LOT COVERAGE CALCULATION:

MAIN RESIDENCE: LOT SIZE: 230,607 S.F.

MAIN HOUSE	3,308	@ 100%	=3,308
GARAGE	772	@ 100	= 772
DECKS/PATIOS/PORCH	3,631	@ 50	=1,815

SHOP/APARTMENT:

APARTMENT	747	@100%	= 747
UPPER STORAGE	469	N/A	
SHOP	2,472	@100%	=2,472
DECKS/PATIOS/PORCH	564	@ 50%	= 282
DRIVEWAY	6,355	@ 35%	=2,224
TOTAL			=11,620

COVERAGE: 11,620/230,607 = 5%

NOTE: ALL SF CALCS TO OUTSIDE FACE OF STUD OR CONCRETE WALL

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SANDERS RESIDENCE
221 MORGAN DRIVE
MCCALL, ID 83638

Stamp:

P&Z APPLICATION SET

Revisions:

1 ROT DATE: 7/21/2020 1

Date: 7/21/2020
Project No: 1916
Drawn by: LB, ES
Checked by: LB
Title: COVER
Sheet: A1-1

THIS IS INTENDED TO BE PRINTED ON A 24"X36" SHEET. ALL OTHER SHEET SIZES WILL NOT BE PRINTED TO SCALE.

1 EXISTING AERIAL
SCALE: 1" = 40'

0 20' 40' 80'

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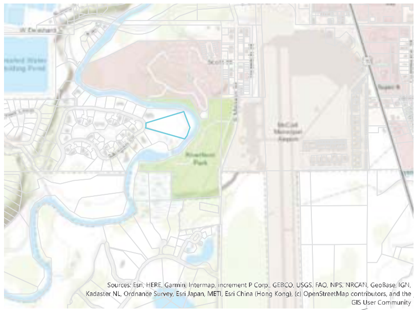
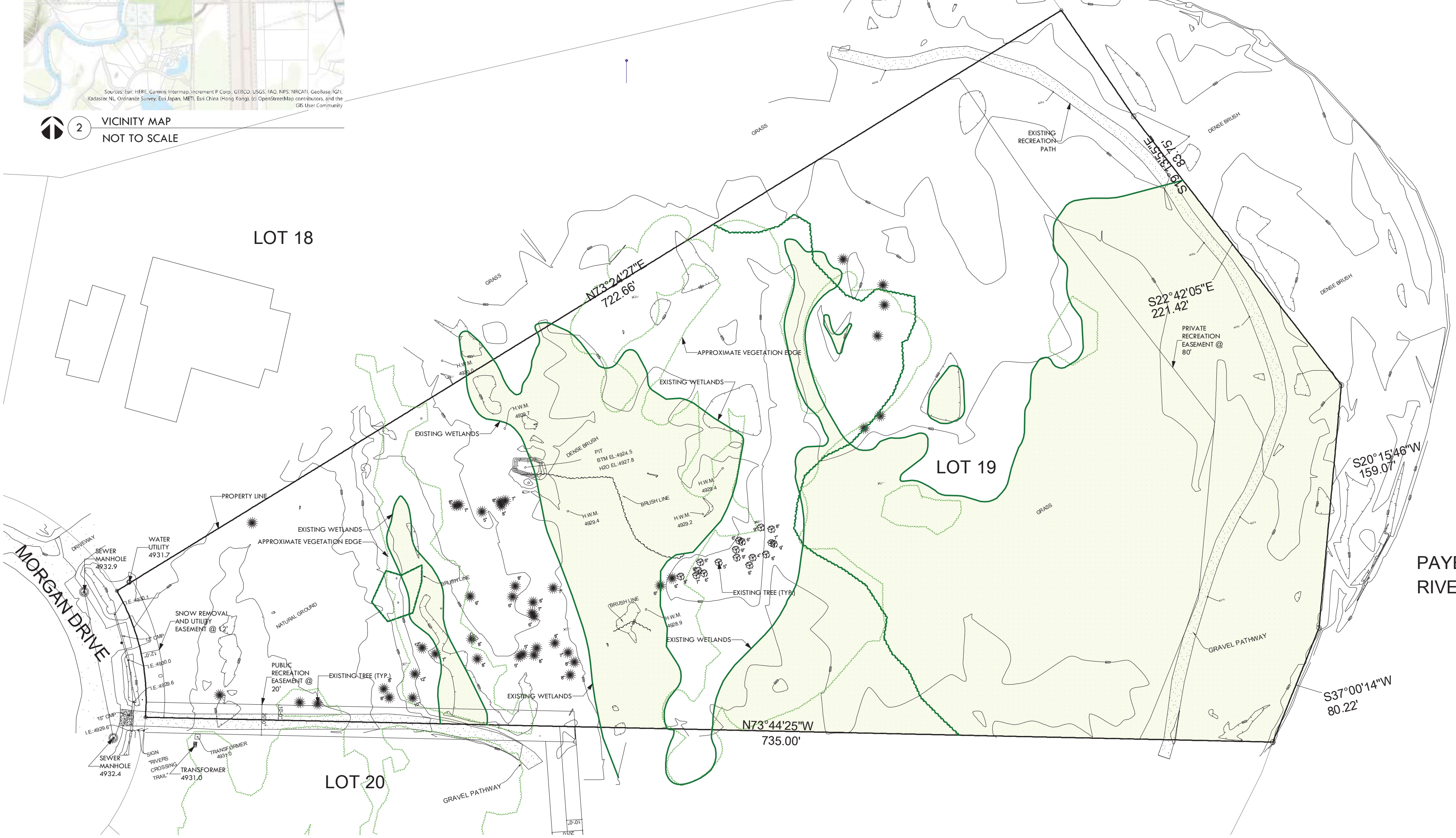
Revisions:
(ROT.DATE: 7/21/2020)

Date: 7/21/2020
Project No: 1916
Drawn by: LB, ES
Checked by: LB
Title: EXISTING SITE ON AERIAL

Sheet: A2-1



2 VICINITY MAP
NOT TO SCALE



1 EXISTING SITE PLAN
SCALE: 1" = 30'

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BIMcloud: s132-148-167-156 - BIMcloud Basic for ARCHICAD 23/SANDERS RIVER CROSSING

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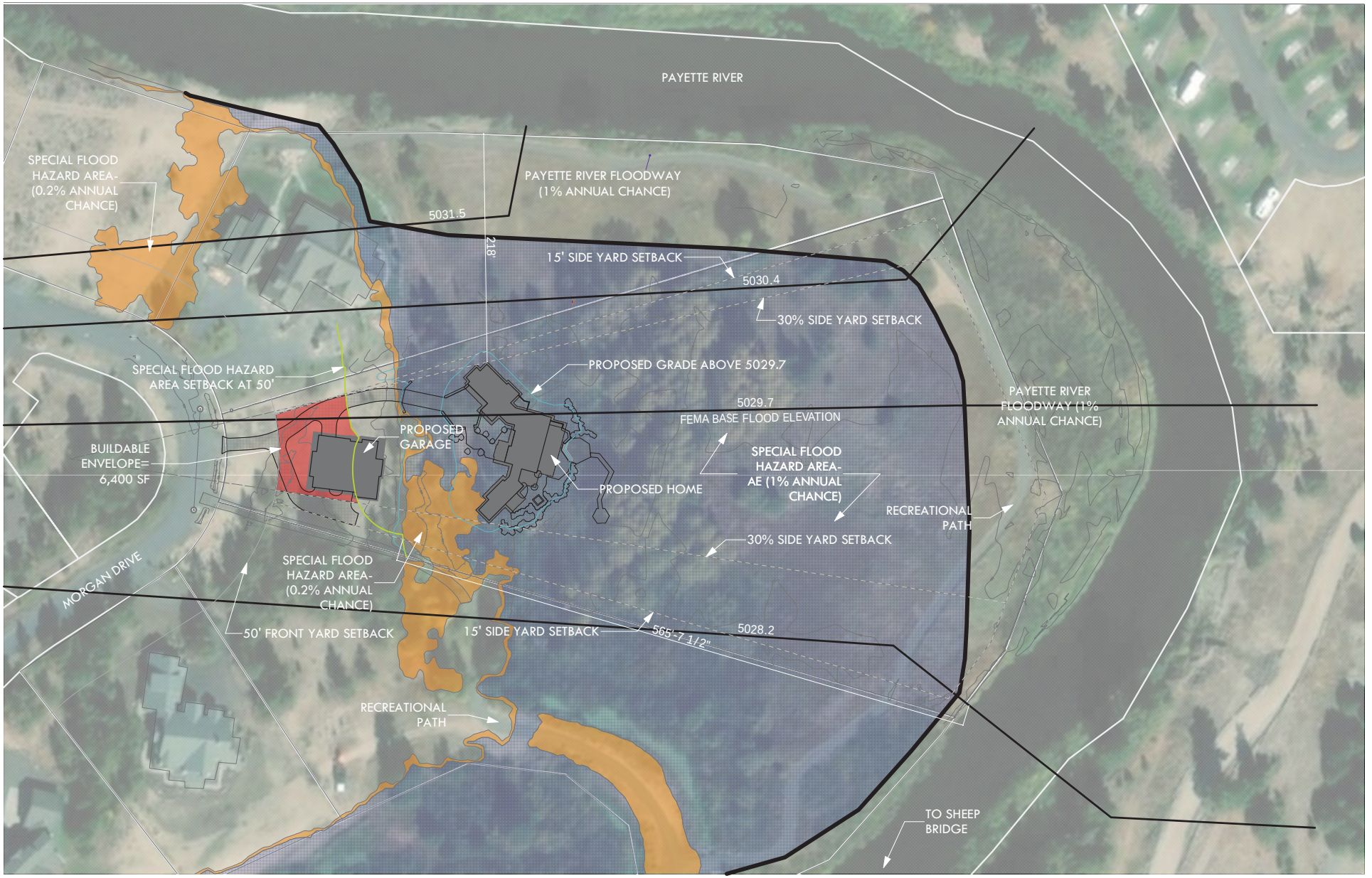
PLOT DATE: 7/21/2020

Date:	7/21/2020
Project No:	1916
Drawn by:	LB, ES
Checked by:	LB
Title:	EXISTING SITE PLAN
Sheet:	A2-2



1 BUILDING SITE CONSTRAINTS
SCALE: 1" = 40'

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Revisions:
(ROI DATE: 7/21/2020)

Date: 7/21/2020
Project No: 1916
Drawn by: LB, ES
Checked by: LB
Title: BUILDING SITE CONSTRAINTS
Sheet: A2-3

1 SITE FROM RIVER TRAIL NEAR BRIDGE

2 STREET VIEW

3 SITE FROM ACROSS RIVER

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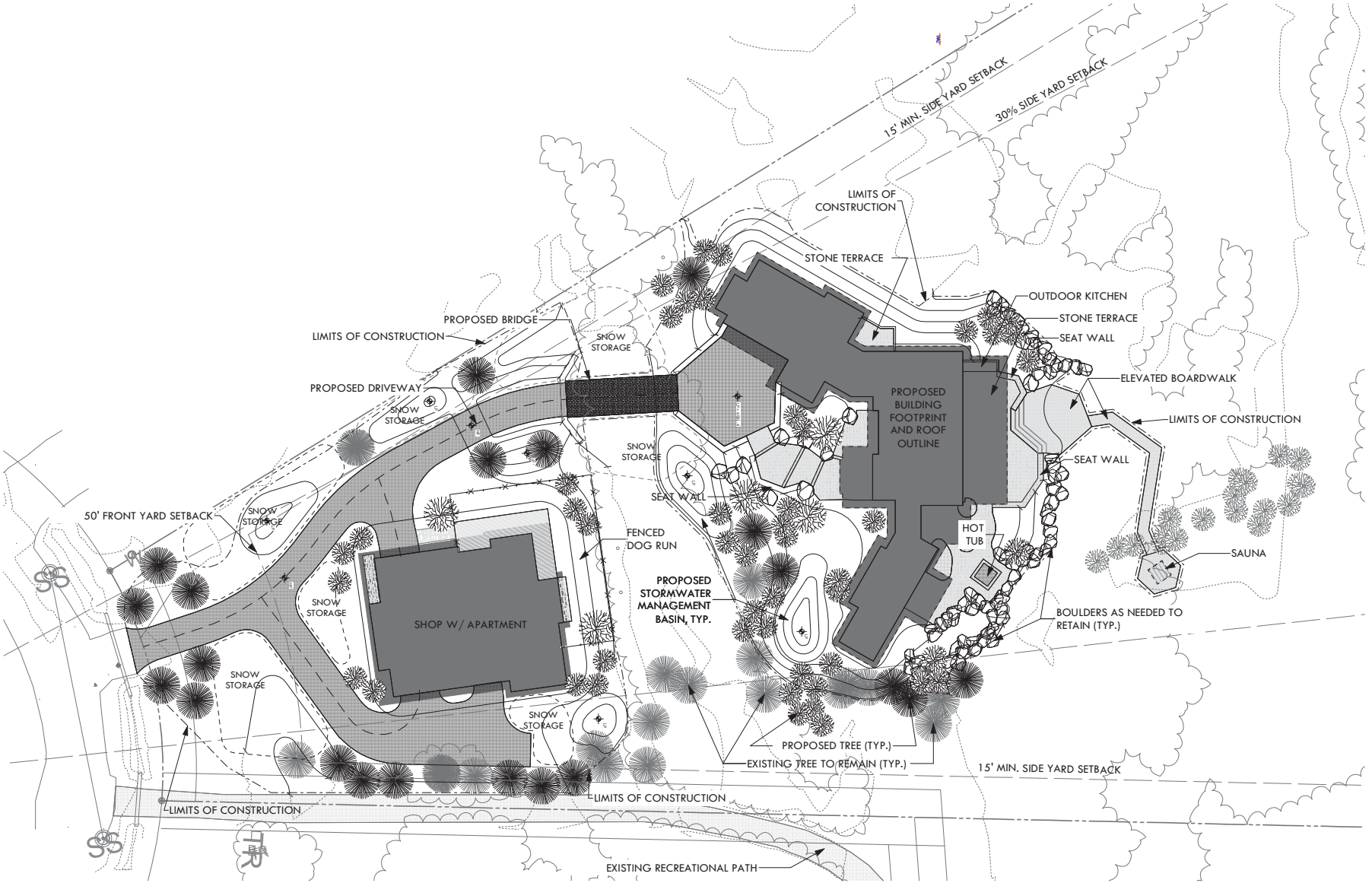
Revisions:
(ROT.DATE: 7/21/2020)

Date: 7/21/2020
Project No: 1916
Drawn by: LB, ES
Checked by: LB
Title: SITE PHOTOS
Sheet: A2-4



1 PROPOSED SITE PLAN
SCALE: 1/16" = 1'-0"

THIS IS INTENDED TO BE PRINTED ON A 24"X36" SHEET. ALL OTHER SHEET SIZES WILL NOT BE PRINTED TO SCALE.

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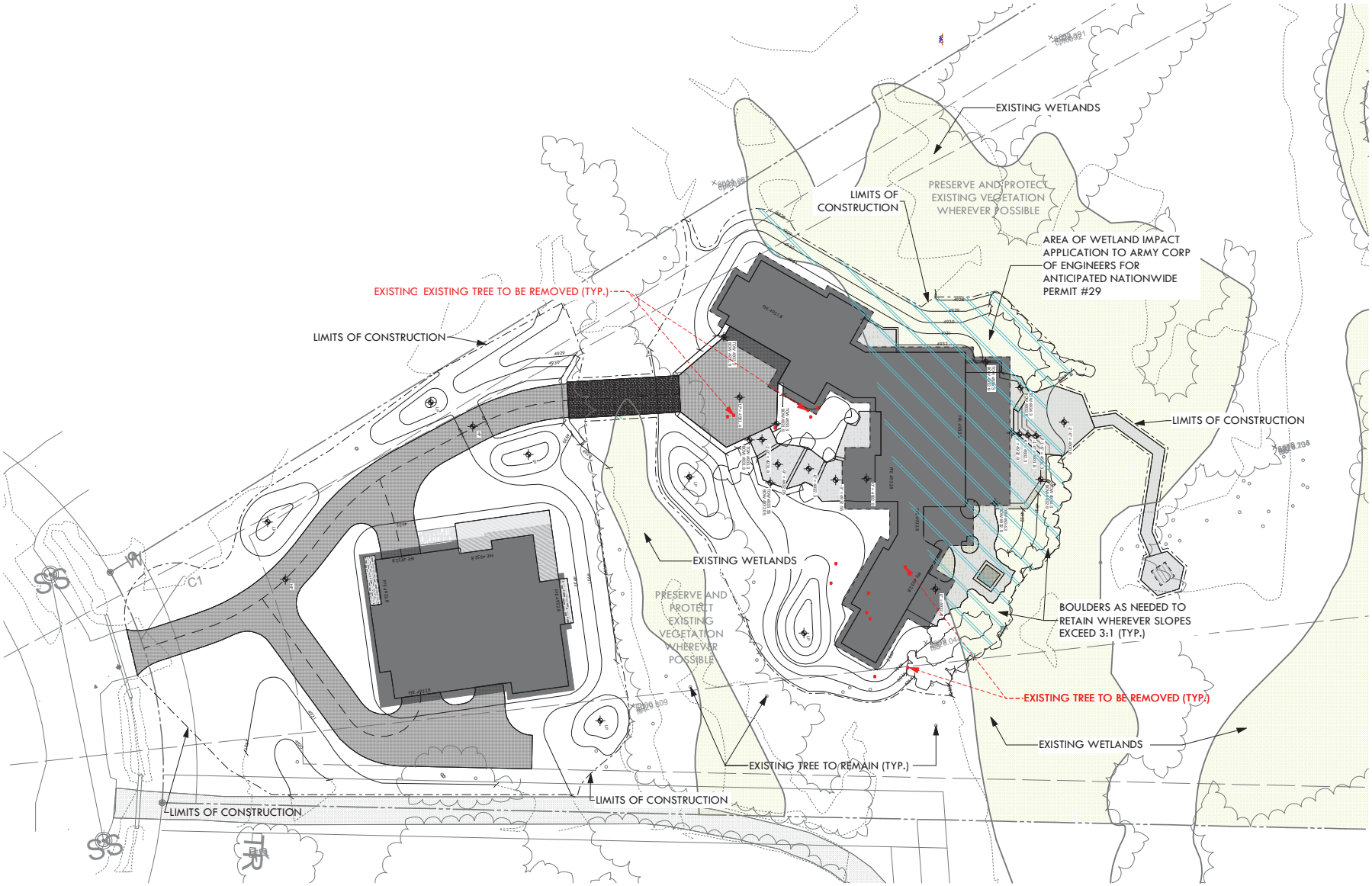
Revisions:
(ROTATE 7/21/2020)

Date: 7/21/2020
Project No: 1916
Drawn by: LB, ES
Checked by: LB
Title: PROPOSED SITE PLAN
Sheet: A2-5



1 SITE GRADING & DEMO PLAN
SCALE: 1/16" = 1'-0"

THIS IS INTENDED TO BE PRINTED ON A 24"X36" SHEET. ALL OTHER SHEET SIZES WILL NOT BE PRINTED TO SCALE.

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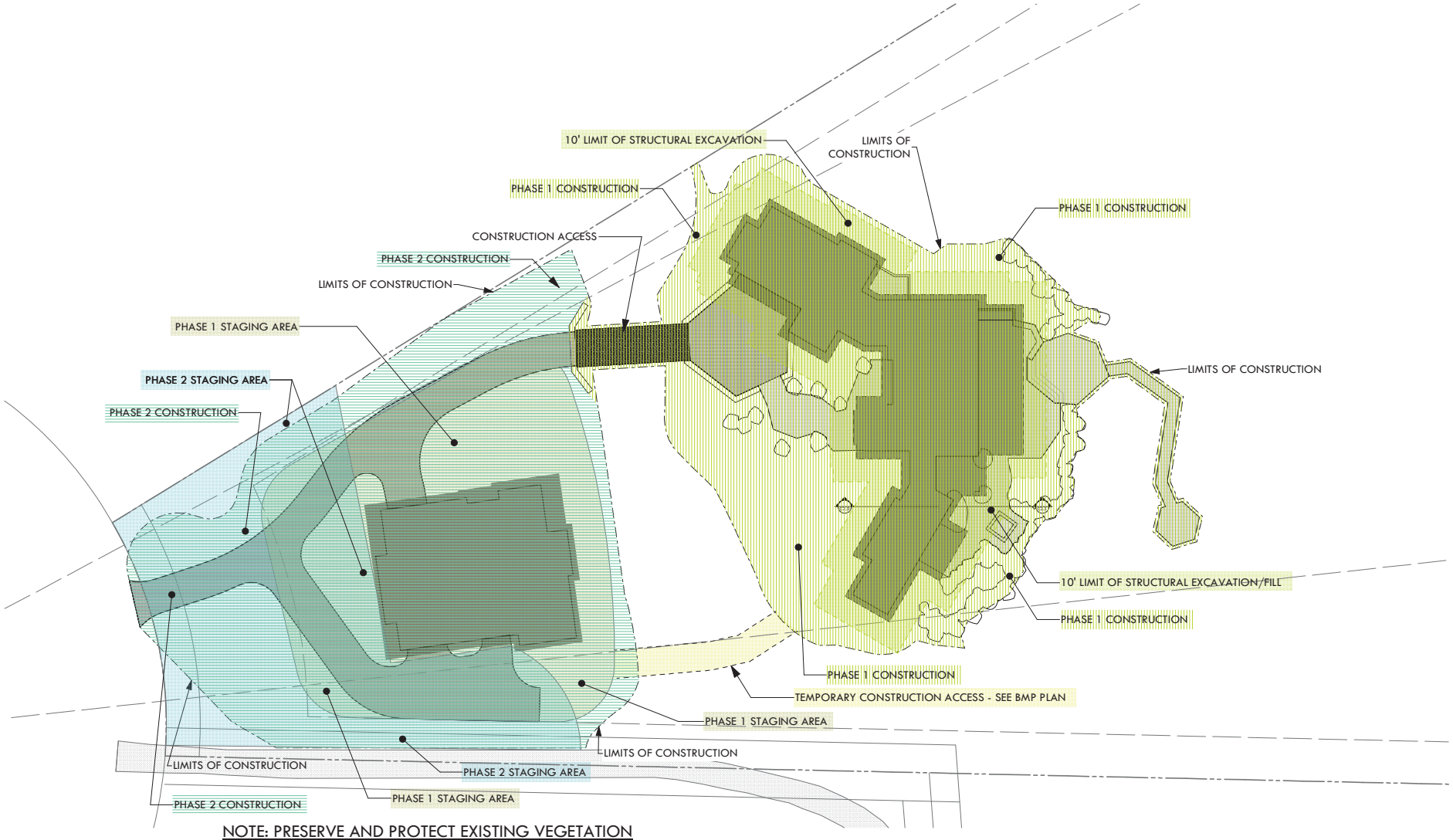
Revisions:
(ROTATE 7/21/2020)

Date:	7/21/2020
Project No:	1916
Drawn by:	LB, ES
Checked by:	LB

Title: SITE GRADING & DEMO PLAN

Sheet: A2-6



NOTE: PRESERVE AND PROTECT EXISTING VEGETATION WHEREVER POSSIBLE DURING CONSTRUCTION

1 STAGING PLAN
SCALE: 1/16" = 1'-0"

0 8 16 32

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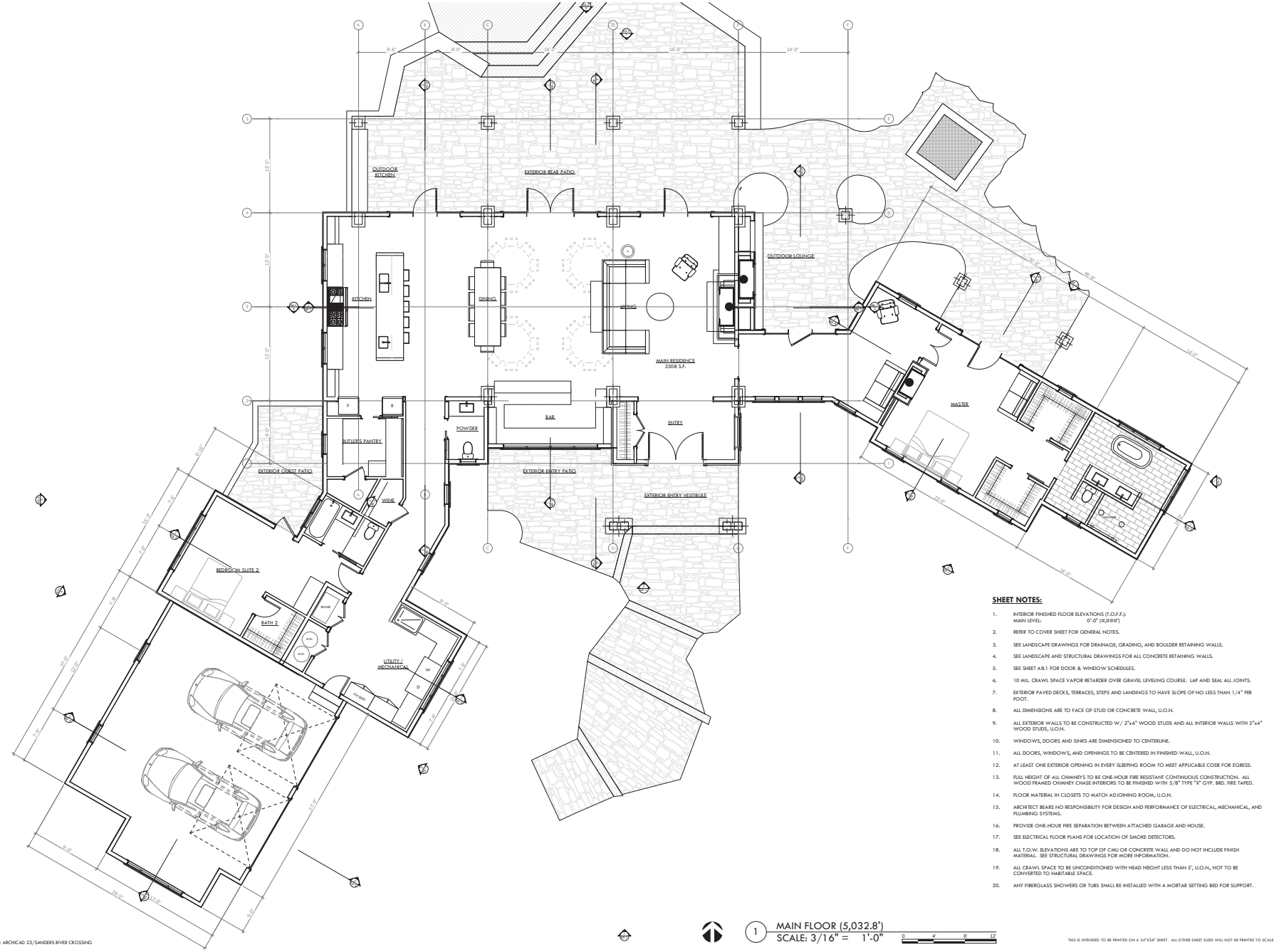
Date: 7/21/2020
Project No: 1916
Drawn by: LB, ES
Checked by: LB
Title: STAGING PLAN

Sheet: A2-7



SHEET NOTES:

1. INTERIOR FINISHED FLOOR ELEVATIONS (T.O.F.F.):
   MAIN LEVEL: 0'-0" (#,###')
2. REFER TO COVER SHEET FOR GENERAL NOTES.
3. SEE LANDSCAPE DRAWINGS FOR DRAINAGE, GRADING, AND BOULDER RETAINING WALLS.
4. SEE LANDSCAPE AND STRUCTURAL DRAWINGS FOR ALL CONCRETE RETAINING WALLS.
5. SEE SHEET A8.1 FOR DOOR & WINDOW SCHEDULES.
6. 10 MIL. CRAWL SPACE VAPOR RETARDER OVER GRAVEL LEVELING COURSE. LAP AND SEAL ALL JOINTS.
7. EXTERIOR PAVED DECKS, TERRACES, STEPS AND LANDINGS TO HAVE SLOPE OF NO LESS THAN 1/4" PER FOOT.
8. ALL DIMENSIONS ARE TO FACE OF STUD OR CONCRETE WALL, U.O.N.
9. ALL EXTERIOR WALLS TO BE CONSTRUCTED W/ 2"x6" WOOD STUDS AND ALL INTERIOR WALLS WITH 2"x4" WOOD STUDS, U.O.N.
10. WINDOWS, DOORS AND SINKS ARE DIMENSIONED TO CENTERLINE.
11. ALL DOORS, WINDOWS, AND OPENINGS TO BE CENTERED IN FINISHED WALL, U.O.N.
12. AT LEAST ONE EXTERIOR OPENING IN EVERY SLEEPING ROOM TO MEET APPLICABLE CODE FOR EGRESS.
13. FULL HEIGHT OF ALL CHIMNEYS TO BE ONE-HOUR FIRE RESISTANT CONTINUOUS CONSTRUCTION. ALL WOOD FRAMED CHIMNEY CHASE INTERIORS TO BE FINISHED WITH 5/8" TYPE "X" GYP. BRD. FIRE TAPED.
14. FLOOR MATERIAL IN CLOSETS TO MATCH ADJOINING ROOM, U.O.N.
15. ARCHITECT BEARS NO RESPONSIBILITY FOR DESIGN AND PERFORMANCE OF ELECTRICAL, MECHANICAL, AND PLUMBING SYSTEMS.
16. PROVIDE ONE-HOUR FIRE SEPARATION BETWEEN ATTACHED GARAGE AND HOUSE.
17. SEE ELECTRICAL FLOOR PLANS FOR LOCATION OF SMOKE DETECTORS.
18. ALL T.O.W. ELEVATIONS ARE TO TOP OF CMU OR CONCRETE WALL AND DO NOT INCLUDE FINISH MATERIAL. SEE STRUCTURAL DRAWINGS FOR MORE INFORMATION.
19. ALL CRAWL SPACE TO BE UNCONDITIONED WITH HEAD HEIGHT LESS THAN 5', U.O.N., NOT TO BE CONVERTED TO HABITABLE SPACE.
20. ANY FIBERGLASS SHOWERS OR TUBS SHALL BE INSTALLED WITH A MORTAR SETTING BED FOR SUPPORT.

1 MAIN FLOOR (5,032.8')
SCALE: 3/16" = 1'-0"

0 4' 8' 12'

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221 MORGAN DRIVE
MCCALL, ID 83638

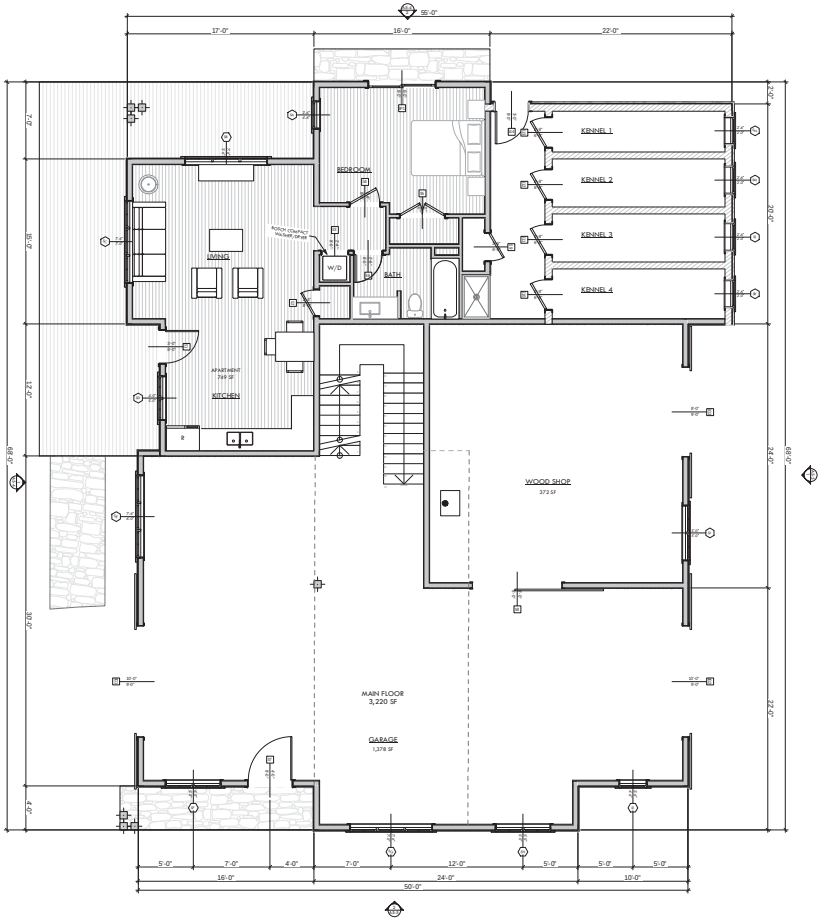
Stamp:
P&Z APPLICATION SET

Revisions:
(ROT.DATE: 7/21/2020)

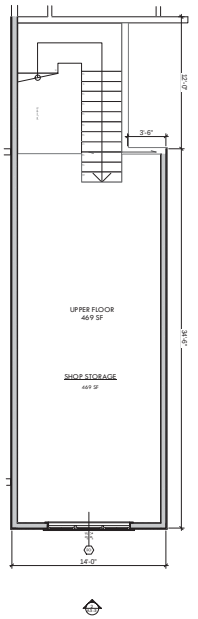
Date: 7/21/2020
Project No: 1916
Drawn by: LB, ES
Checked by: LB

Title:
MAIN HOUSE FLOOR PLAN

Sheet:
A3-1



1 SHOP FLOOR PLAN
SCALE: 3/16" = 1'-0"



2 SHOP UPPER STORAGE
SCALE: 3/16" = 1'-0"

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Drawn by: LB, ES
Checked by: LB
Title: SHOP FLOOR PLAN
Sheet: A3-2

1 FRONT PERSPECTIVE
NOT TO SCALE

2 REAR PERSPECTIVE MASTER
NOT TO SCALE

3 REAR PERSPECTIVE KITCHEN
NOT TO SCALE

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Title:
MAIN HOUSE PERSPECTIVES

Sheet:
A5-6

1 EXISTING STREET VIEW

2 PROPOSED STREET VIEW

3 SHOP PERSPECTIVE 1

4 SHOP PERSPECTIVE 2

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Checked by: LB
Title: SHOP PERSPECTIVES

Sheet: A5-7

PLANT LIST AND LEGEND

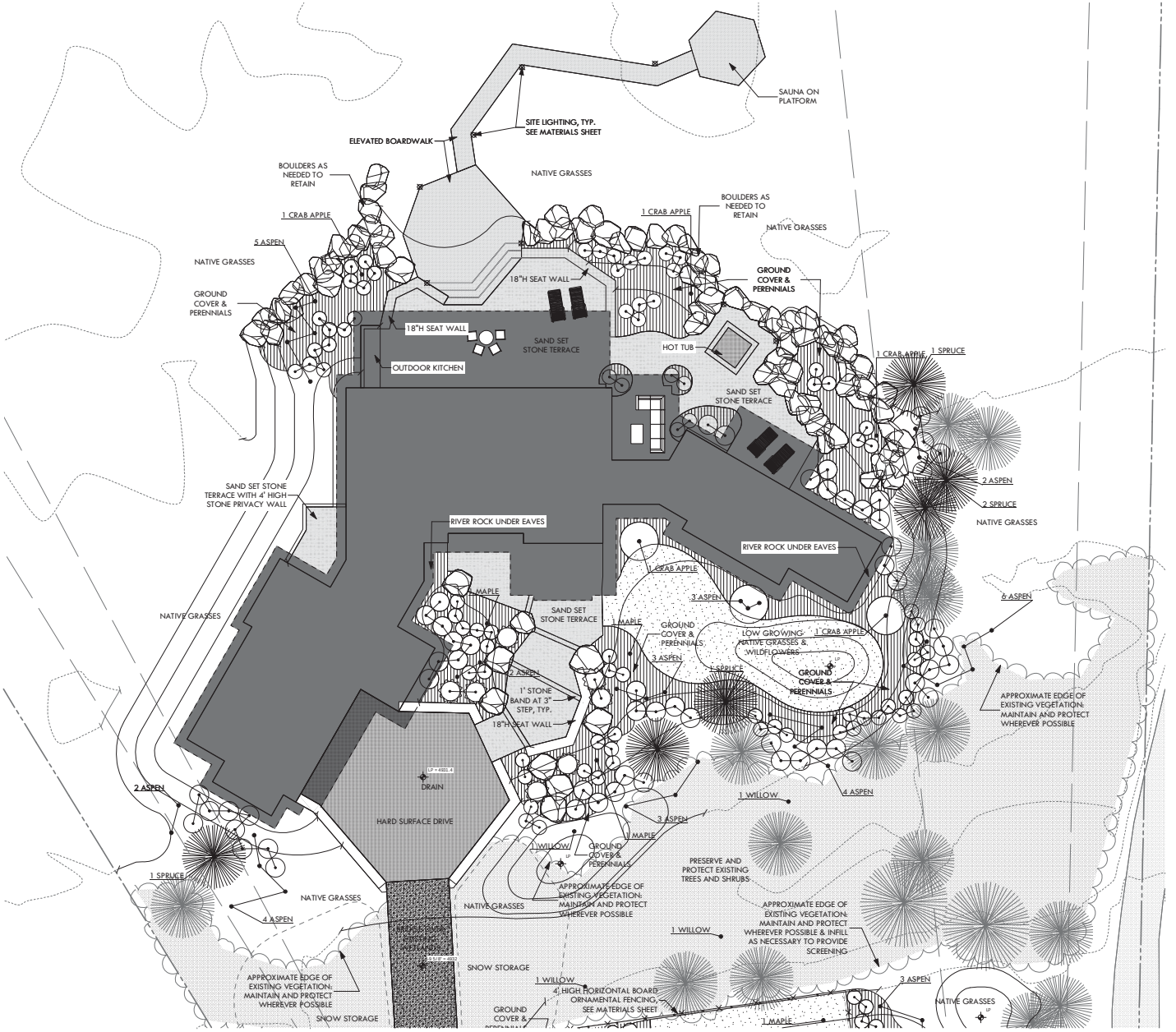
TREES:
2" cal. Quaking Aspen
Crab Apple
Maple
Spruce
Willow

SHRUBS:
5 gallon shrubs such as:
Ash Leaf Spiraea, Serviceberry, Native Spiraea, Alpine Currant, Mugo Pine, and Snowberry

1 gallon shrubs and perennials such as:
Thimbleberry, Ornamental grasses

6" pots such as:
Native Lupine, Coneflower, Columbine, and Kinnicknick

GROUND COVERS:
Hydroseeded low growing native grasses such as:
Buffalo Grass, Fescues



1 PLANTING PLAN
SCALE: 1" = 10'

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Revisions:
1 ROT.DATE: 7/21/2020 1

Date: 7/21/2020
Project No: 1916
Drawn by: LB, ES
Checked by: LB
Title: LANDSCAPE PLAN AT HOUSE

Sheet: L1.1

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PLANT LIST AND LEGEND

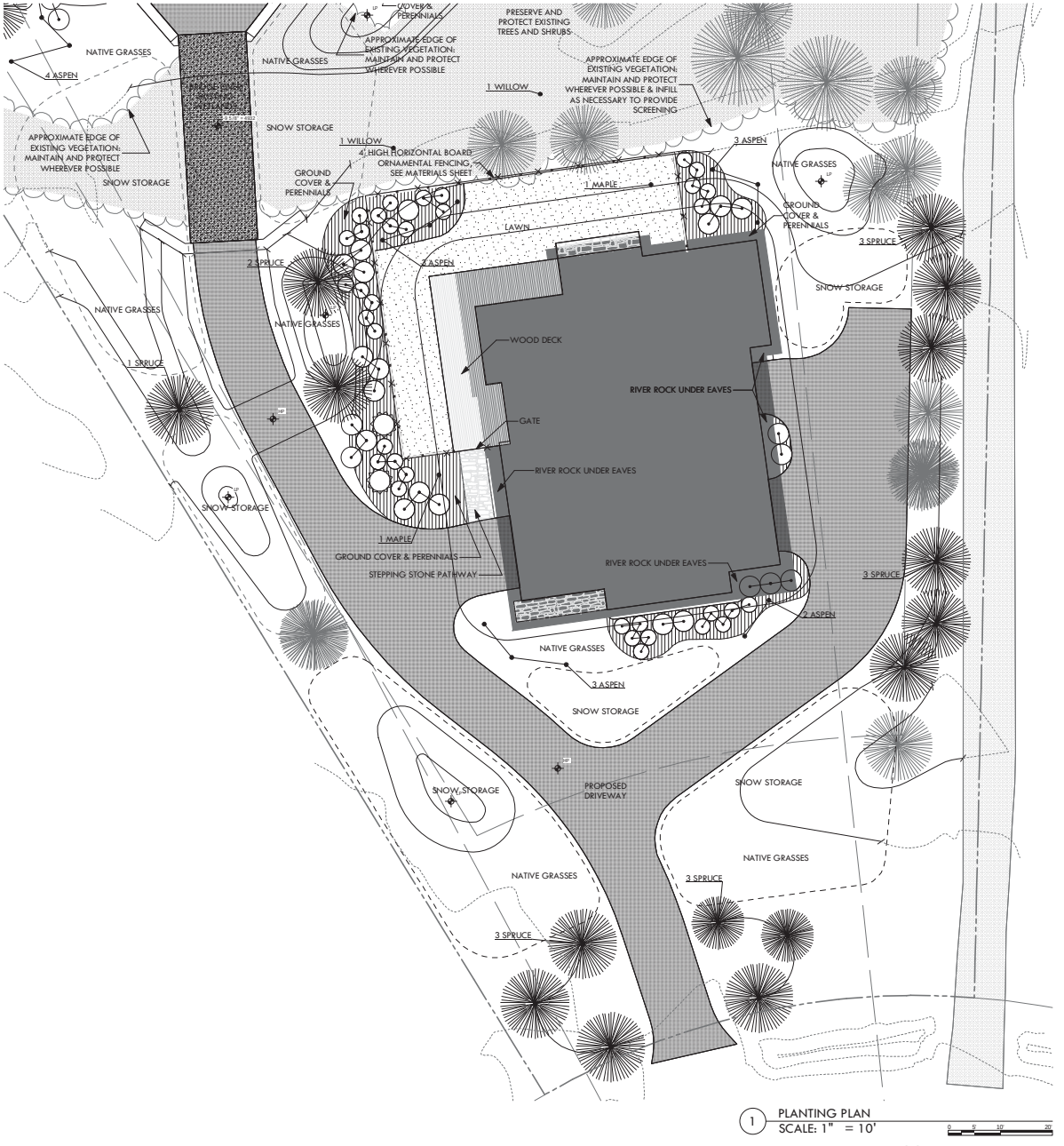
TREES:
2" cal. Quaking Aspen
Crab Apple
Maple
Spruce
Willow

SHRUBS:
5 gallon shrubs such as:
Ash Leaf Spiraea, Serviceberry, Native Spiraea, Alpine Currant, Mugo Pine, and Snowberry

1 gallon shrubs and perennials such as:
Thimbleberry, Ornamental grasses

6" pots such as:
Native Lupine, Coneflower, Columbine, and Kinnicknick

GROUND COVERS:
Hydroseeded low growing native grasses such as:
Buffalo Grass, Fescues



1 PLANTING PLAN
SCALE: 1" = 10'

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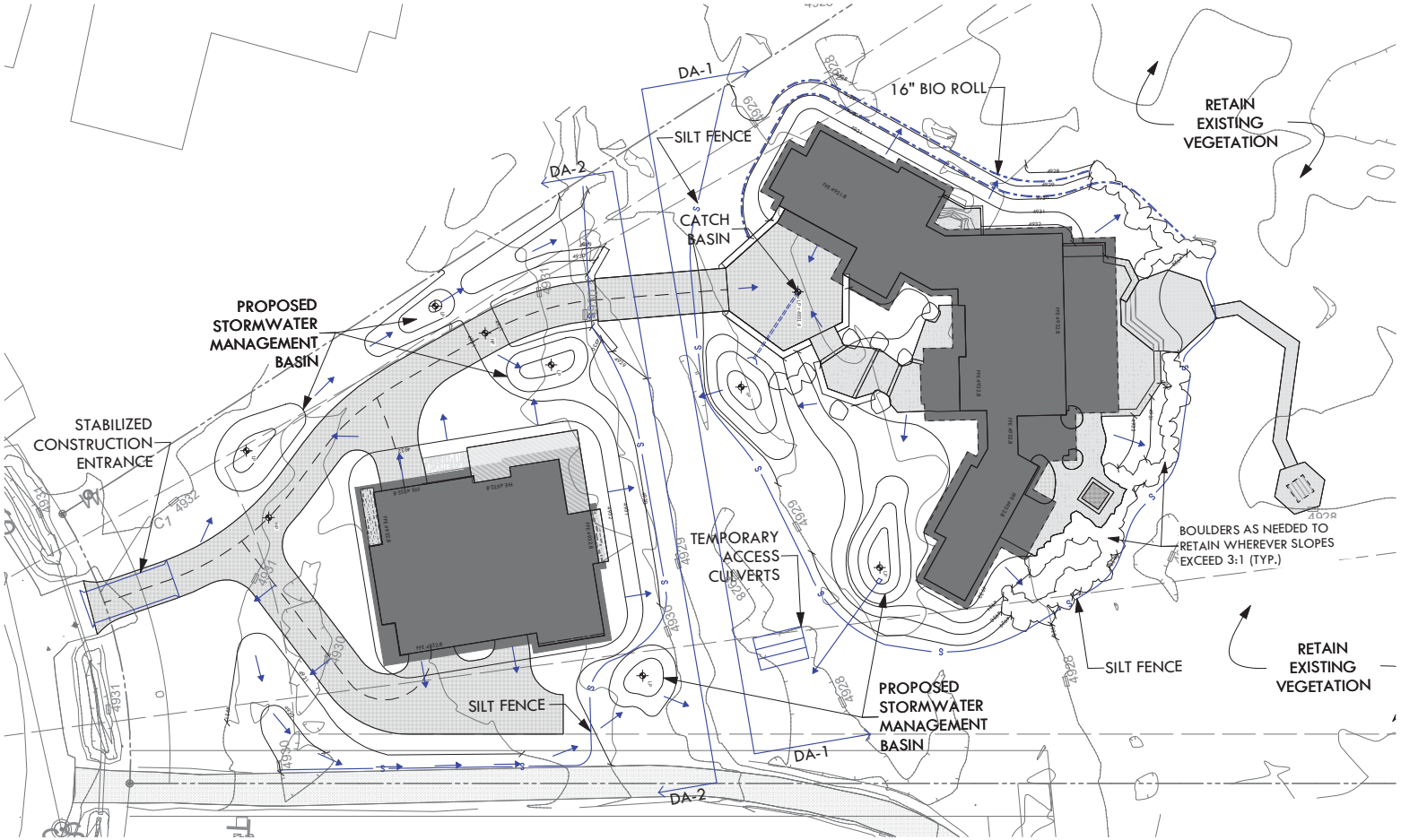
Date: 7/21/2020
Project No: 1916
Drawn by: LB, ES
Checked by: LB
Title: LANDSCAPE PLAN AT SHOP
Sheet: L1.2

Note:
The Sanders Residence project site has been divided into two drainage areas (DA-1, DA-2). Drainage Area DA-1 consist of the main residence building and constructed fill pad located in the flood plain. The majority of the runoff from DA-1 is pristine uncontaminated stormwater from the building roof, decks, and walkways. The treatment of the uncontaminated stormwater will be to direct flow to adjacent protected existing vegetation. The driveway located in DA-1 is considered contaminated stormwater and will be treated using a stormwater treatment basin and directed through a constructed grassy swale to the adjacent existing protected existing vegetation.
Drainage area DA-2 will implement the same approach as DA-1. The drainage area consists of an accessory building, driveway, and walkways. Stormwater runoff that has driveway interaction will be treated with adjacent stormwater basins and directed through constructed grassy swales to the existing protected vegetation located to the west of DA-2.

SEDIMENT/EROSION CONTROL LEGEND
- STABILIZED CONSTRUCTION ENTRANCE
- SILT FENCE
- 16 INCH BIO ROLL
- DRAINAGE ARROW
- INLET PIPE
- STORMWATER MANAGEMENT BASIN
- DRAINAGE AREA
- TEMPORARY ACCESS CULVERTS



1 PROPOSED STORMWATER PLAN
SCALE: 1/16" = 1'-0"

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Project No: 1916
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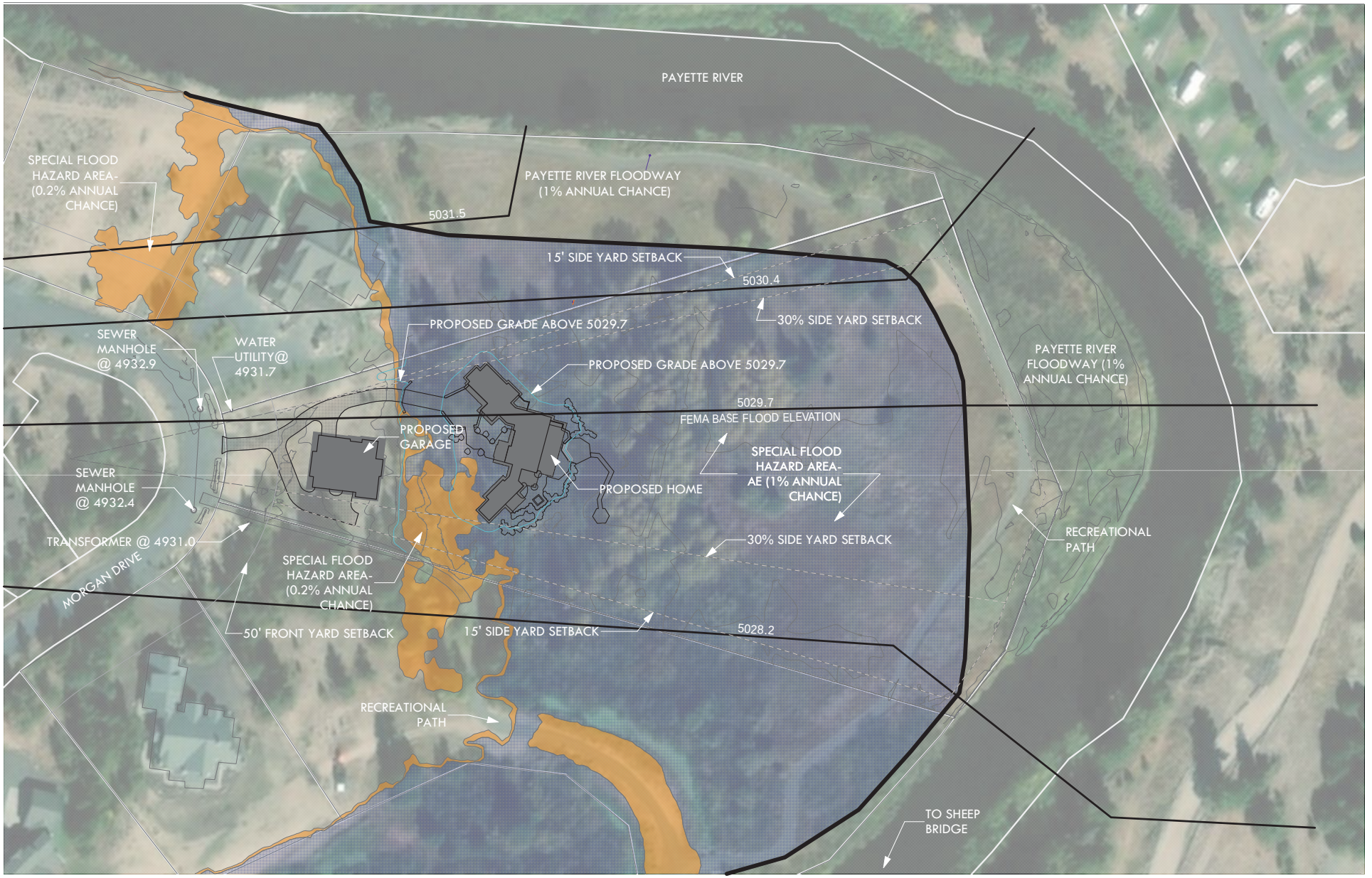
Title: PRELIM STORMWATER MANAGEMENT PLAN
Sheet: C2.1



1 SITE PLAN WITH SPECIAL FLOOD HAZARD AREA
SCALE: 1" = 40'

0 20 40 80

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Date: 7/21/2020
Project No: 1916
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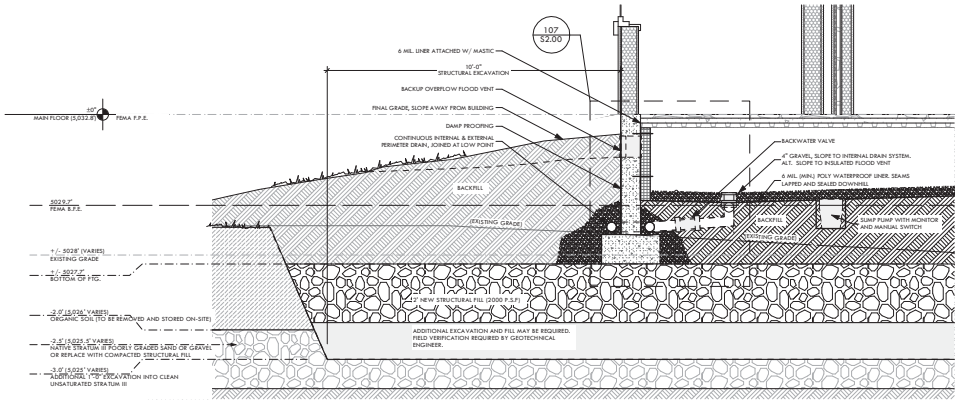
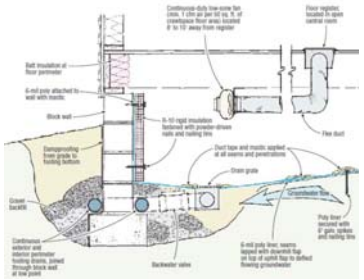
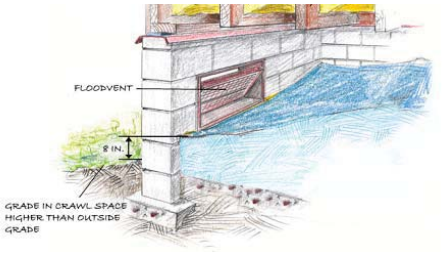
Checked by: LB
Title: FLOOD HAZARD AREA
Sheet: C2.2



1 PRELIMINARY EXCAVATION SECTION
SCALE: 1/2" = 1'-0"



2 SEALED CRAWLSPACE- PRIMARY CONTROL



3 OVERFLOW FLOOD VENT DIAGRAM- SECONDARY CONTROL

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Project No: 1916
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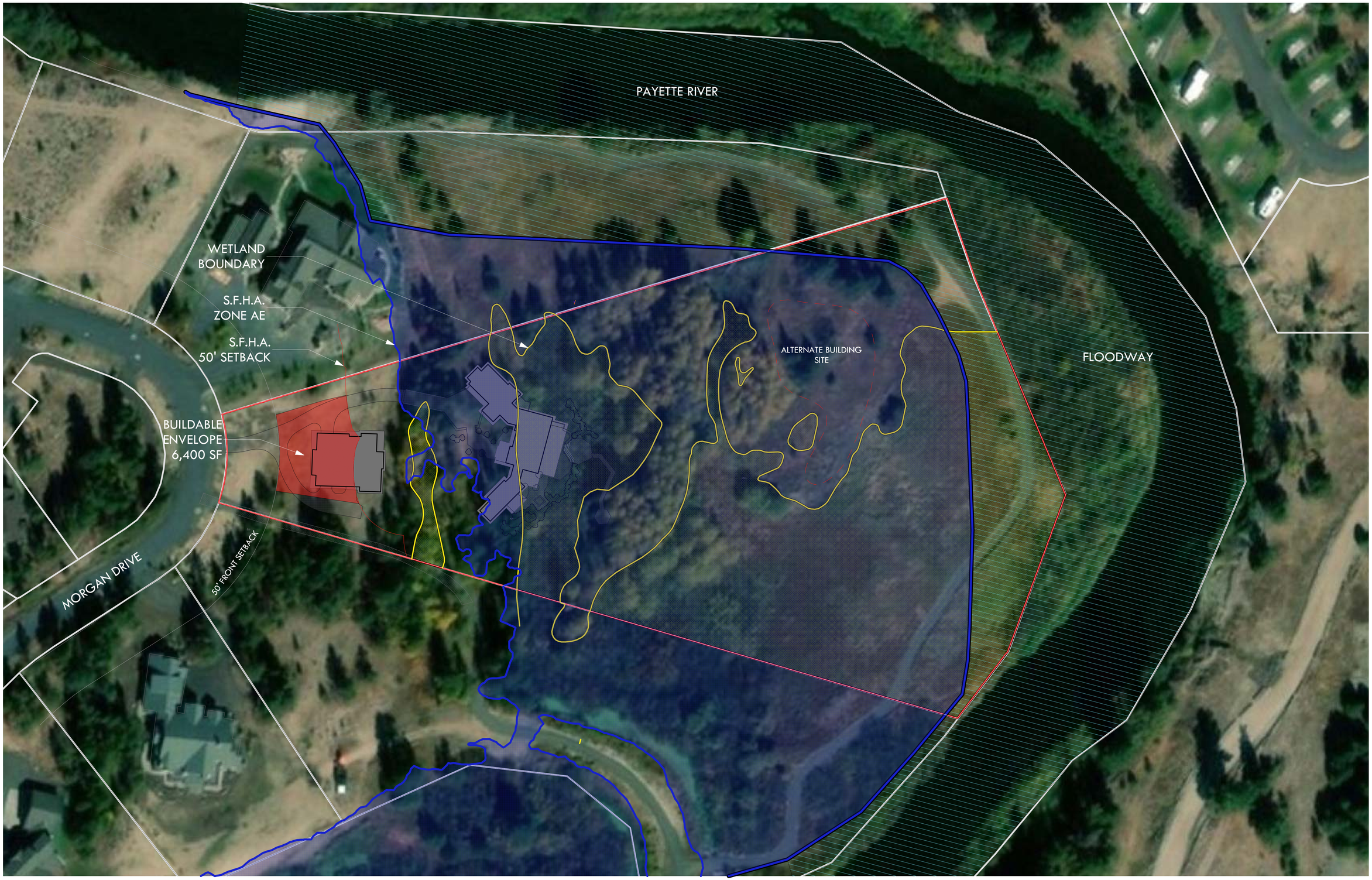
Title:
PRELIMINARY CRAWLSPACE
AND GRADING DETAILS

Sheet:
C2.3



1 P&Z SITE VISIT EXHIBIT
SCALE: 1" = 40'

0 20' 40' 80'

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[PLOT DATE: 10/2/2020]

Date: 10/2/2020
Project No: 1916
Drawn by: LB, ES
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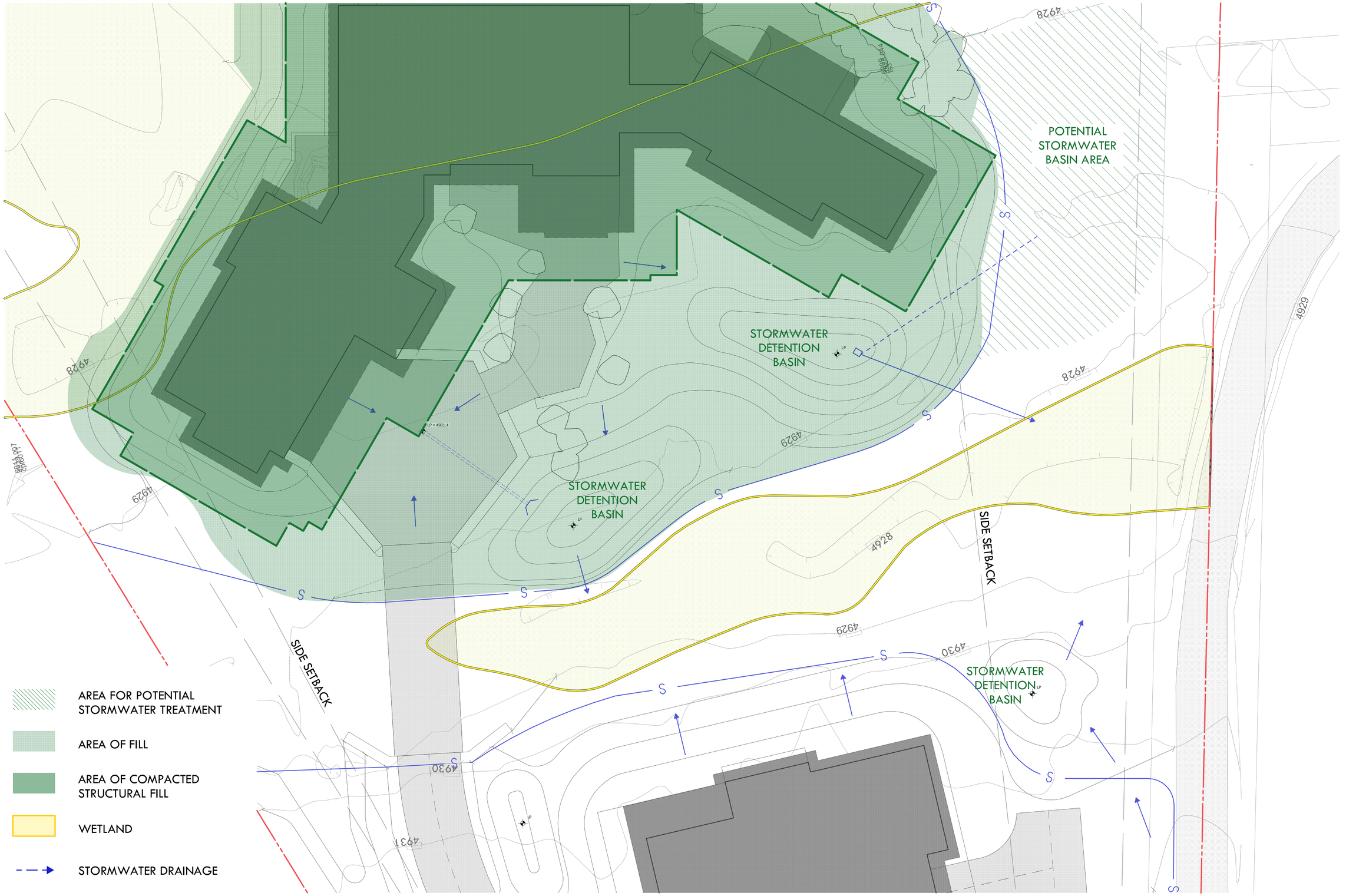
Title: P&Z SITE VISIT EXHIBIT
Sheet: A2-4



1 P&Z SITE VISIT EXHIBIT II
SCALE: 1/8" = 1'-0"

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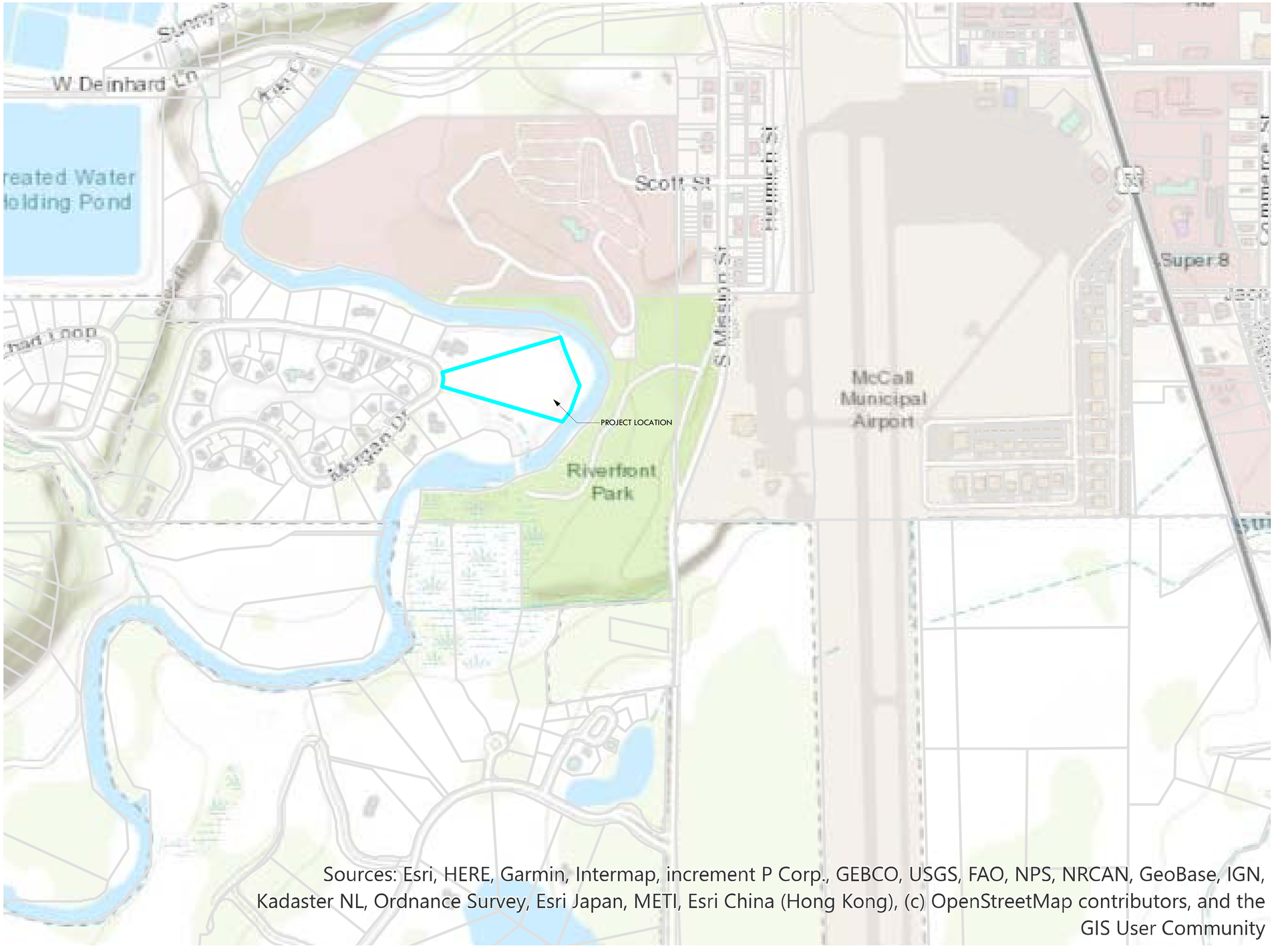
SANDERS RIVER RESIDENCE
221 MORGAN DRIVE
MCCALL, ID 83638

Stamp:
P&Z APPLICATION SET

Revisions:
[PLOT DATE: 10/2/2020]

Date: 10/2/2020
Project No: 1916
Drawn by: LB, ES
Checked by: LB
Title: P&Z SITE VISIT EXHIBIT II
Sheet: A2-5



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

VICINITY MAP
NOT TO SCALE

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Date: 8/31/2020
Project No: 1916
Drawn by: LB, ES
Checked by: LB
Title: VICINITY MAP
Sheet: A2-1

1 EXISTING AERIAL
SCALE: 1" = 40'

0 20' 40' 80'

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Title:
EXISTING SITE ON AERIAL

Sheet:
A2-2

1 BUILDING SITE CONSTRAINTS
SCALE: 1" = 40'

0 20' 40' 80'

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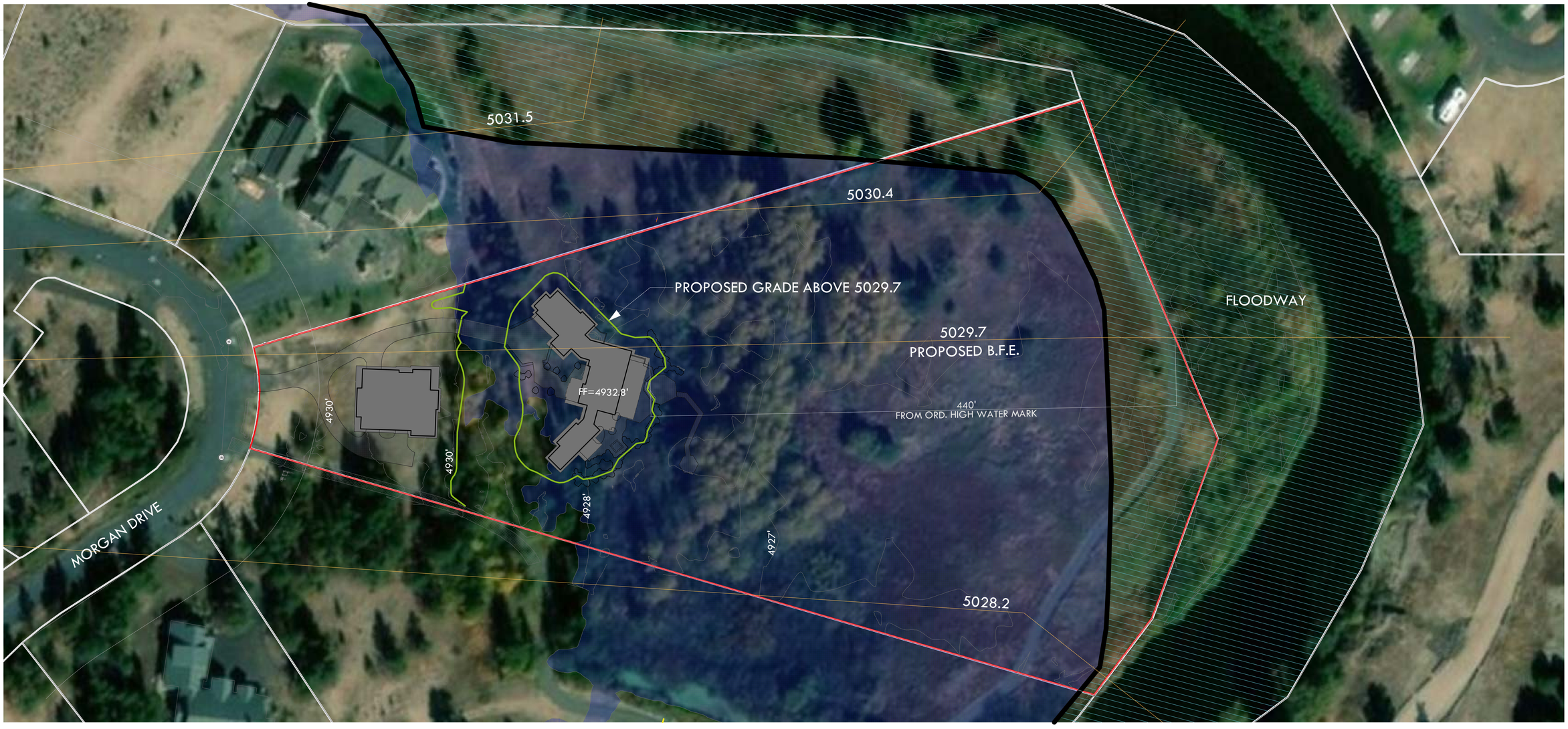
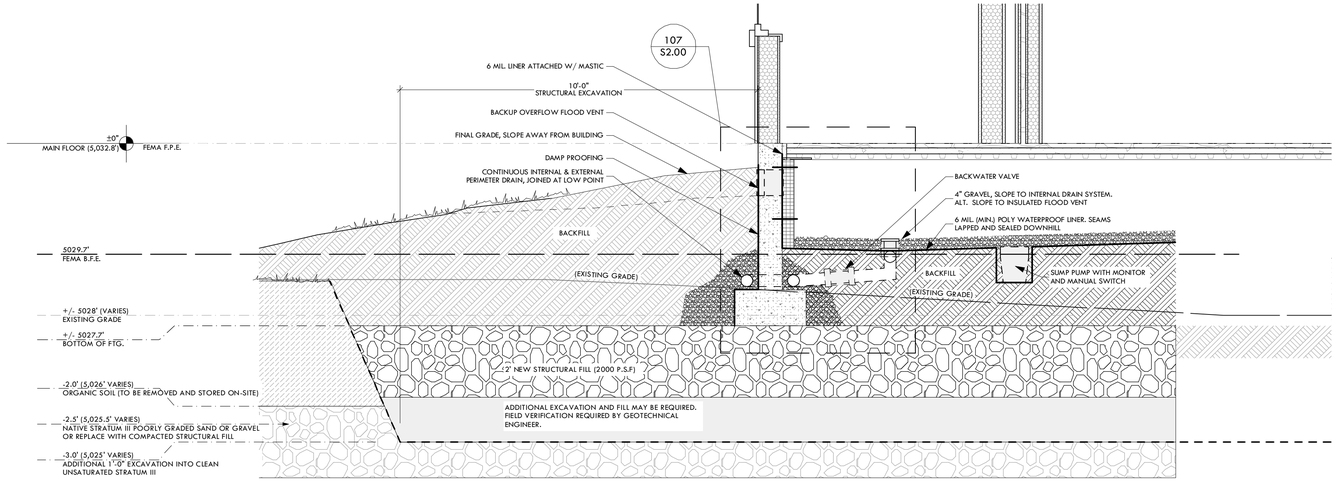
Title:
P&Z SITE FEATURES

Sheet:
A2-3

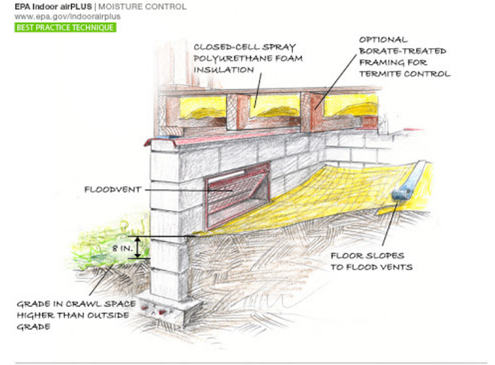


1 BUILDING SITE CONSTRAINTS
SCALE: 1" = 40'

0 20' 40' 80'



2 EXCAVATION SECTION
NOT TO SCALE



3 Flood Vent Diagram
NOT TO SCALE

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Project No: 1916
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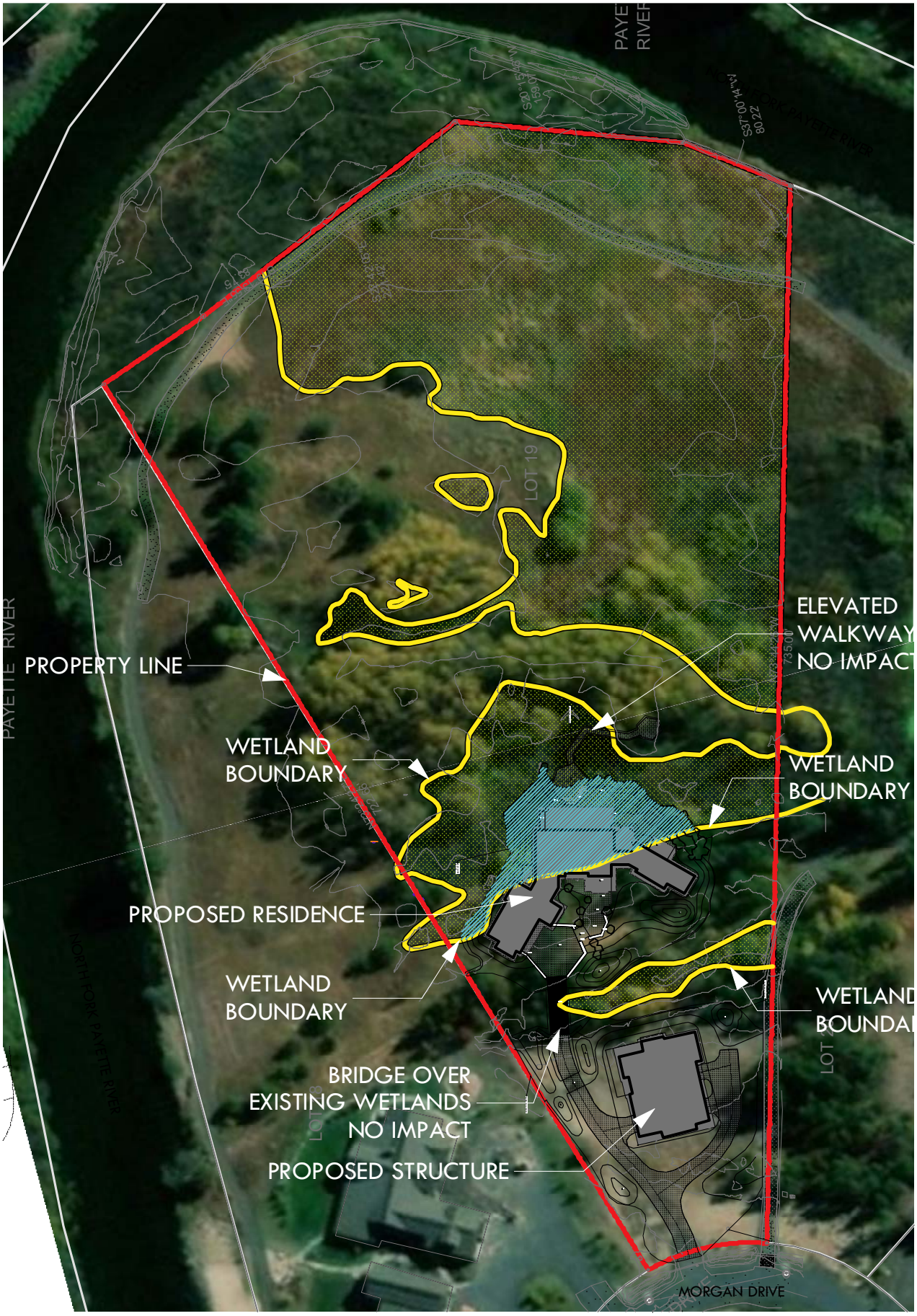
Checked by: LB

Title: P&Z BUILDING SITE CONSTRAINTS

Sheet: A2-5



0' 50' 100' 200'

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WETLAND IMPACT WITH PHOTO

SANDERS RESIDENCE
221 MORGAN DRIVE MCCALL ID 83638
RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2

FIGURE:	5
DRAWN BY:	ES
DATE:	8/31/2020

JOINT APPLICATION FOR PERMITS

U.S. ARMY CORPS OF ENGINEERS - IDAHO DEPARTMENT OF WATER RESOURCES - IDAHO DEPARTMENT OF LANDS

Authorities: The Department of Army Corps of Engineers (Corps), Idaho Department of Water Resources (IDWR), and Idaho Department of Lands (IDL) established a joint process for activities impacting jurisdictional waterways that require review and/or approval of both the Corps and State of Idaho. Department of Army permits are required by Section 10 of the Rivers & Harbors Act of 1899 for any structure(s) or work in or affecting navigable waters of the United States and by Section 404 of the Clean Water Act for the discharge of dredged or fill materials into waters of the United States, including adjacent wetlands. State permits are required under the State of Idaho, Stream Protection Act (Title 42, Chapter 38, Idaho Code and Lake Protection Act (Section 58, Chapter 13 et seq., Idaho Code). In addition the information will be used to determine compliance with Section 401 of the Clean Water Act by the appropriate State, Tribal or Federal entity.

Joint Application: Information provided on this application will be used in evaluating the proposed activities. Disclosure of requested information is voluntary. Failure to supply the requested information may delay processing and issuance of the appropriate permit or authorization. **Applicant will need to send a completed application, along with one (1) set of legible, black and white (8½"x11"), reproducible drawings that illustrate the location and character of the proposed project / activities to both the Corps and the State of Idaho.**

See Instruction Guide for assistance with Application. Accurate submission of requested information can prevent delays in reviewing and permitting your application. Drawings including vicinity maps, plan-view and section-view drawings must be submitted on 8-1/2 x 11 papers.

Do not start work until you have received all required permits from both the Corps and the State of Idaho

FOR AGENCY USE ONLY			
USACE NWW-	Date Received:	☐ Incomplete Application Returned	Date Returned:
Idaho Department of Water Resources No.	Date Received:	☐ Fee Received DATE:	Receipt No.:
Idaho Department of Lands No.	Date Received:	☐ Fee Received DATE:	Receipt No.:

INCOMPLETE APPLICANTS MAY NOT BE PROCESSED

1. **CONTACT INFORMATION - APPLICANT** Required:			2. **CONTACT INFORMATION - AGENT:**		
Name: Dwain and Cindy Sanders			Name: James Fronk		
Company:			Company: James Fronk Consulting, LLC.		
Mailing Address: 3411 S. Koster Road			Mailing Address: P.O. Box 576		
City: Tracy	State: CA	Zip Code: 95304	City: McCall	State: Idaho	Zip Code: 83638
Phone Number *(include area code)*: 209 480 0340	E-mail: dsanders@plowsheerllc.com		Phone Number *(include area code)*: 208 634 8093	E-mail: jamesfronkconsulting@gmail.com	

3. PROJECT NAME or TITLE: River's Crossing Subdivision - Lot 19			4. PROJECT STREET ADDRESS: 221 Morgan Drive		
5. PROJECT COUNTY: Valley	6. PROJECT CITY: McCall		7. PROJECT ZIP CODE: 83638		8. NEAREST WATERWAY/WATERBODY: North Fork of the Payette River
9. TAX PARCEL ID#: RP12N04E208575	10. LATITUDE: 44 53' 34" N LONGITUDE: 116 00' 74" W		11a. 1/4:	11b. 1/4: So. 1/2	11c. SECTION: 17
11d. TOWNSHIP: T8N	11e. RANGE: R3E				
12a. ESTIMATED START DATE: October 2020	12b. ESTIMATED END DATE: October 2021		13a. IS PROJECT LOCATED WITHIN ESTABLISHED TRIBAL RESERVATION BOUNDARIES? ☒ NO ☐ YES Tribe:		
13b. IS PROJECT LOCATED IN LISTED ESA AREA? ☒ NO ☐ YES			13c. IS PROJECT LOCATED ON/NEAR HISTORICAL SITE? ☐ NO ☐ YES		

14. DIRECTIONS TO PROJECT SITE: Include vicinity map with legible crossroads, street numbers, names, landmarks.

See attached - Figure 1 - Vicinity Map.

15. PURPOSE and NEED: ☐ Commercial ☐ Industrial ☐ Public ☒ Private ☐ Other

Describe the reason or purpose of your project; include a brief description of the overall project. Continue to Block 16 to detail each work activity and overall project.

The purpose of the River's Crossing - Lot 19 project is to build a single family residence and detached garage/shop with living quarters (see Figures 1 - 7).

16. DETAILED DESCRIPTION OF EACH ACTIVITY WITHIN OVERALL PROJECT. Specifically indicate portions that take place within waters of the United States, including wetlands: Include dimensions; equipment, construction, methods; erosion, sediment and turbidity controls; hydrological changes: general stream/surface water flows, estimated winter/summer flows; borrow sources, disposal locations etc.:

The activity to take place on River's Crossing Lot 19 will be the placement of imported fill into 0.15 acres of Shrub/Scrub wetlands. The construction consists of removing the unsuitable soil material to an average depth of 2.0 ft. to the sands and gravels layer. The unsuitable soil material will be removed to an upland area and be used for landscape soil to be incorporated into an upland natural landscape setting. The construction equipment to be used will consist of tracked excavator, dump trucks, front end loader, and structural material rubber tire compactor. Erosion control methods will consist of installation of silt fencing around disturbed areas and the installation of 16" Bio Rolls around the compacted fill for the Building Pad (see Erosion Control Plan - Figure 7).

17. DESCRIBE ALTERNATIVES CONSIDERED to AVOID or MEASURES TAKEN to MINIMIZE and/ or COMPENSATE for IMPACTS to WATERS of the UNITED STATES, INCLUDING WETLANDS: See Instruction Guide for specific details.

The ability to avoid the wetland impacts has been considered. However, the buildable site area is too small to construct a realistic sized single-family residence and detached shop/living quarters. The detached shop/living quarters is a necessary component to the plan. The detached living quarters is required to house a young adult with learning disabilities. Considerable effort has been made by the applicant with the Architect and Land Planner to minimize the wetland impacts to 0.15 acres on 5.29 acre lot with a delineated wetland area of 2.7 acres. The additional measures to avoid wetland impacts on Lot 19 include the construction of a driveway bridge over a wetland area, helical screw construction of patio decks, walkways, and gazebo platform. The construction of the bridge and other raised platforms will be a minimum of 2 ft. above the delineated wetland areas natural ground.

18. PROPOSED MITIGATION STATEMENT or PLAN: If you believe a mitigation plan is not needed, provide a statement and your reasoning why a mitigation plan is NOT required. Or, attach a copy of your proposed mitigation plan.

Nation Wide Permit

19. TYPE and QUANTITY of MATERIAL(S) to be discharged below the ordinary high water mark and/or wetlands:

Dirt or Topsoil:	_____	cubic yards
Dredged Material:	_____	cubic yards
Clean Sand:	_____	cubic yards
Clay:	_____	cubic yards
Gravel, Rock, or Stone:	_____	cubic yards
Concrete:	_____	cubic yards
Other (describe): Structural base material	968	cubic yards
Other (describe: _____	_____	cubic yards
TOTAL:	968	cubic yards

20. TYPE and QUANTITY of impacts to waters of the United States, including wetlands:

Filling:	_____ acres	_____ sq ft.	_____	cubic yards
Backfill & Bedding:	0.15 acres	_____ sq ft.	968	cubic yards
Land Clearing:	_____ acres	_____ sq ft.	_____	cubic yards
Dredging:	_____ acres	_____ sq ft.	_____	cubic yards
Flooding:	_____ acres	_____ sq ft.	_____	cubic yards
Excavation:	_____ acres	_____ sq ft.	_____	cubic yards
Draining:	_____ acres	_____ sq ft.	_____	cubic yards
Other: _____ :	_____ acres	_____ sq ft.	_____	cubic yards
TOTALS:	0.15 acres	_____ sq ft.	968	cubic yards

21. HAVE ANY WORK ACTIVITIES STARTED ON THIS PROJECT? ☒ NO ☐ YES If yes, describe ALL work that has occurred including dates.

n/a

22. LIST ALL PREVIOUSLY ISSUED PERMIT AUTHORIZATIONS:

n/a

23. ☐ YES, Alteration(s) are located on Public Trust Lands, Administered by Idaho Department of Lands

24. SIZE AND FLOW CAPACITY OF BRIDGE/CULVERT and DRAINAGE AREA SERVED: n/a Square Miles

25. IS PROJECT LOCATED IN A MAPPED FLOODWAY? ☐ NO ☒ YES If yes, contact the floodplain administrator in the local government jsrisdiction in which the project is located. A Floodplain Development permit and a No-rise Certification may be required.

26a WATER QUALITY CERTIFICATION: Pursuant to the Clean Water Act, anyone who wishes to discharge dredge or fill material into the waters of the United States, either on private or public property, must obtain a Section 401 Water Quality Certification (WQC) from the appropriate water quality certifying government entity.
See Instruction Guide for further clarification and all contact information.

The following information is requested by IDEQ and/or EPA concerning the proposed impacts to water quality and anti-degradation:

☒ NO ☐ YES Is applicant willing to assume that the affected waterbody is high quality?
☒ NO ☐ YES Does applicant have water quality data relevant to determining whether the affected waterbody is high quality or not?
☒ NO ☐ YES Is the applicant willing to collect the data needed to determine whether the affected waterbody is high quality or not?

26b. BEST MANAGEMENT PRACTICTES (BMP's): List the Best Management Practices and describe these practices that you will use to minimize impacts on water quality and anti-degradation of water quality. All feasible alternatives should be considered - treatment or otherwise. Select an alternative which will minimize degrading water quality

Erosion control methods will consist of installation of silt fence around disturbed areas and the installation of 16" Bio Rolls around the compacted fill for the Building Pad (see Erosion Control Plan - Figure 7).

Through the 401 Certification process, water quality certification will stipulate minimum management practices needed to prevent degradation.

27. LIST EACH IMPACT to stream, river, lake, reservoir, including shoreline: Attach site map with each impact location.

Activity	Name of Water Body	Intermittent Perennial	Description of Impact and Dimensions	Impact Length Linear Feet
			TOTAL STREAM IMPACTS (Linear Feet):	

28. LIST EACH WETLAND IMPACT include mechanized clearing, fill, excavation, flood, drainage, etc. Attach site map with each impact location.

Activity	Wetland Type: Emergent, Forested, Scrub/Shrub	Distance to Water Body (linear ft)	Description of Impact Purpose: road crossing, compound, culvert, etc.	Impact Length (acres, square ft linear ft
	Shrub/Scrub	565	Building Pad	0.15
			TOTAL WETLAND IMPACTS (Square Feet):	0.15

29. ADJACENT PROPERTY OWNERS NOTIFICATION REQUIREM: Provide contact information of ALL adjacent property owners below.

Name: John and Jill Thompson Mailing Address: 227 Morgan Drive City: McCall State: Idaho Zip Code: 83638 Phone Number *(include area code)*: E-mail:	Name: Thomas S. Helpenstell Revocable Trust Mailing Address: 1916 Lakewood Drive City: Olympia State: WA Zip Code: 98501 Phone Number *(include area code)*: E-mail:
Name: City of Mcll Mailing Address: 216 E. Park Street City: McCall State: Idaho Zip Code: 83638 Phone Number *(include area code)*: E-mail:	Name: Whitney Framing LLC Mailing Address: P.O. Boix 189 City: McCall State: Idaho Zip Code: 83638 Phone Number *(include area code)*: E-mail:
Name: Mailing Address: City: State: Zip Code: Phone Number *(include area code)*: E-mail:	Name: Mailing Address: City: State: Zip Code: Phone Number *(include area code)*: E-mail:
Name: Mailing Address: City: State: Zip Code: Phone Number *(include area code)*: E-mail:	Name: Mailing Address: City: State: Zip Code: Phone Number *(include area code)*: E-mail:

30. SIGNATURES: STATEMENT OF AUTHORIAZATION / CERTIFICATION OF AGENT / ACCESS

Application is hereby made for permit, or permits, to authorize the work described in this application and all supporting documentation. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein; or am acting as the duly authorized agent of the applicant (Block 2). I hereby grant the agencies to which this application is made, the right to access/come upon the above-described location(s) to inspect the proposed and completed work/activities.

Signature of Applicant: _____ *Date:* _____

Signature of Agent: _____ *Date:* _____

This application must be signed by the person who desires to undertake the proposed activity AND signed by a duly authorized agent (see Block 1, 2, 30). Further, 18 USC Section 1001 provides that: "*Whoever, in any manner within the jurisdiction of any department of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both*".

29. ADJACENT PROPERTY OWNERS NOTIFICATION REQUIREM: Provide contact information of ALL adjacent property owners below.

Name: John and Jill Thompson Mailing Address: 227 Morgan Drive City: State: Zip Code: McCall Idaho 83638 Phone Number (include area code): E-mail:	Name: Thomas S. Helpenstell Revocable Trust Mailing Address: 1916 Lakewood Drive City: State: Zip Code: Olympia WA 98501 Phone Number (include area code): E-mail:
Name: City of McII Mailing Address: 216 E. Park Street City: State: Zip Code: McCall Idaho 83638 Phone Number (include area code): E-mail:	Name: Whitney Framing LLC Mailing Address: P.O. Boix 189 City: State: Zip Code: McCall Idaho 83638 Phone Number (include area code): E-mail:
Name: Mailing Address: City: State: Zip Code: Phone Number (include area code): E-mail:	Name: Mailing Address: City: State: Zip Code: Phone Number (include area code): E-mail:
Name: Mailing Address: City: State: Zip Code: Phone Number (include area code): E-mail:	Name: Mailing Address: City: State: Zip Code Phone Number (include area code): E-mail:

30. SIGNATURES: STATEMENT OF AUTHORIAZATION / CERTIFICATION OF AGENT / ACCESS

Application is hereby made for permit, or permits, to authorize the work described in this application and all supporting documentation. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein; or am acting as the duly authorized agent of the applicant (Block 2). I hereby grant the agencies to which this application is made, the right to access/come upon the above-described location(s) to inspect the proposed and completed work/activities.

Signature of Applicant: _____ *Date:* 8/29/20

Signature of Agent: James A. Hook *Date:* 8/22/2020

This application must be signed by the person who desires to undertake the proposed activity AND signed by a duly authorized agent (see Block 1, 2, 30). Further, 18 USC Section 1001 provides that: *"Whoever, in any manner within the jurisdiction of any department of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both".*

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
BOISE REGULATORY OFFICE
720 EAST PARK BOULEVARD, SUITE 245
BOISE, IDAHO 83712-7757

September 01, 2020

Regulatory Division

SUBJECT: NWW-2020-00422-B03, Construct Single Family Residential House, Wetlands Abutting North Fork Payette River

Mr. Dwain and Mrs. Cindy Sanders
3411 South Koster Road
Tracy, California 95304

Dear Mr. and Mrs. Sanders:

We have determined that your proposed project, Construct Residential House, Wetlands Abutting North Fork Payette River, is authorized in accordance with Department of Army (DA) **Nationwide Permit (NWP) No. 29: Residential Developments**. This project is located at 221 Morgan Drive (Lot 19) within Section 17 of Township 8 North, Range 3 East, near latitude 44º 53' 34" N and longitude -116º 00' 74" W, in the City of McCall, Valley County, Idaho. Please refer to **File Number NWW-2020-00422-B03** in all future correspondence with our office regarding this project.

Project activities involve the estimated discharge of 968 cubic yards of native structural base material (rock, sand and silt) into 0.15 acres of wetlands adjacent to the North Fork Payette River. Project plans indicate that work activities are limited to constructing a residential building pad. An estimated 2.70 acres of jurisdictional wetlands are present on the building lot. Mitigation of wetlands has been achieved through avoidance and minimization. Wetland avoidance measures incorporated within the building plan include constructing a bridge over the driveway approach, installing helical screw jacks for elevated patio decks and walkways, and a gazebo. All work shall be done in accordance to the attached drawings, 1 through 7; titled; *Sanders Residence*, *221 Morgan Drive, McCall, Idaho,* dated August 24, 2020, prepared by James Fronk Consulting, LLC.

AUTHORITY

DA permit authorization is necessary because your project involves the discharge of dredged and/or fill material into Waters of the U.S., including wetlands. This authorization is outlined in Section 404 of the Clean Water Act (33 U.S.C. 1344).

PERMIT CONDITIONS

You must comply with all regional and general for this verification letter to remain valid and to avoid possible enforcement actions. The regional and general permit conditions for *NWP No. 29: Residential Developments* are available online at http://www.nww.usace.army.mil/Business-With-Us/Regulatory-Division/Nationwide-Permits/. If you are unable to access this website or would prefer a hard copy of the regional and general conditions, please notify us and we will provide you a copy. In addition, you must also comply with the special conditions listed below.

GENERAL AND/OR REGIONAL PERMIT CONDITIONS

General Condition 12 is emphasized, which states: "Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark, must be permanently stabilized at the earliest practicable date."

WATER QUALITY CERTIFICATION

You must also comply with the conditions detailed in the Section 401 Water Quality Certification (WQC) issued by the Idaho Department of Environmental Quality (IDEQ) on March 3, 2017. For your review, a copy of this 401 WQC is available on the IDEQ's website at: http://www.deq.idaho.gov/media/60179758/nationwide-permits-2017-401-certification-0317.pdf. If you have questions regarding the conditions set forth in the Water Quality Certification, telephone the IDEQ directly at 208-373-0550.

COMPLIANCE CERTIFICATION

Further, Nationwide Permit General Condition 30 (*Compliance Certification*) requires that every permittee who has received NWP verification must submit a signed certification regarding the completed work and any required mitigation. The enclosed Compliance Certification Form is enclosed for your convenience and must be completed and returned to us.

LIMITATIONS OF THIS VERIFICATION

This letter of authorization does not convey any property rights, or any exclusive privileges and does not authorize any injury to property or excuse you from compliance with other Federal, State, or local statutes, ordinances, regulations, or requirements which may affect this work.

EXPIRATION OF THIS VERIFICATION

This verification is valid until **March 18, 2022**, unless the NWP is modified, suspended or revoked. If your project, as permitted under this NWP verification is

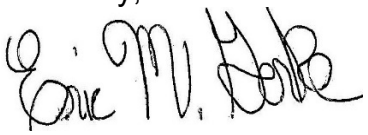
changed and/or modified, you must contact our office prior to commencing any work activities. In the event you have not completed construction of your project by March 18, 2022, please contact us at least 60-days prior to this date. A new application and verification may be required.

CUSTOMER SERVICE

We actively use feedback to improve our delivery and provide you with the best possible service. Please take our online customer service survey to tell us how we are doing. Follow this link to take the survey: http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey. If you have questions or if you would like a paper copy of the survey, telephone our office at 208-433-4464. For more information about the Walla Walla District Regulatory program, visit us online at http://www.nww.usace.army.mil/Business-With-Us/Regulatory-Division/.

If you have questions or need additional information about this permit, you can contact me at 208-433-4462, by mail at the address in the letterhead, or email at eric.m.gerke@usace.army.mil For informational purposes, a copy of this letter will be sent to: Mr. Cass Jones (Idaho Department of Water Resources); Ms. Rachel Santiago-Govier (City of McCall, P&Z); and, Mr. James Fronk (James Fronk Consulting, LLC).

Sincerely,



Eric M. Gerke
Project Manager
Regulatory Division

Enclosures:
Transfer of Nationwide Permit Form
Compliance Form
Drawings 1 through 7; titled; *Sanders Residence*, *221 Morgan Drive, McCall, Idaho,* dated August 24, 2020, prepared by James Fronk Consulting, LLC.

TRANSFER OF NATIONWIDE PERMIT

When the structures or work authorized by this Nationwide Permit, **NWW-2020-00422-B03, Construct Residential House, Wetlands Abutting North Fork Payette River,** are still in existence at the time the property is transferred. The terms and conditions of this Nationwide Permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this Nationwide Permit, the associated liabilities and compliance with the terms and conditions the transferee must sign and date below.

Name of New Owner:
Street Address:
Mailing Address:
City, State, Zip:
Phone Number:

Signature of TRANSFEREE	*DATE*

COMPLIANCE CERTIFICATION

US Army Corps of Engineers
Walla Walla District

Permit Number: NWW-2020-00422-B03

Name of Permittee: Mr. Dwain and Mrs. Cindy Sanders

Date of Issuance: September 1, 2020

Upon completion of the activity authorized by this permit and any mitigation required by the permit, please sign this certification and return it to the following address:

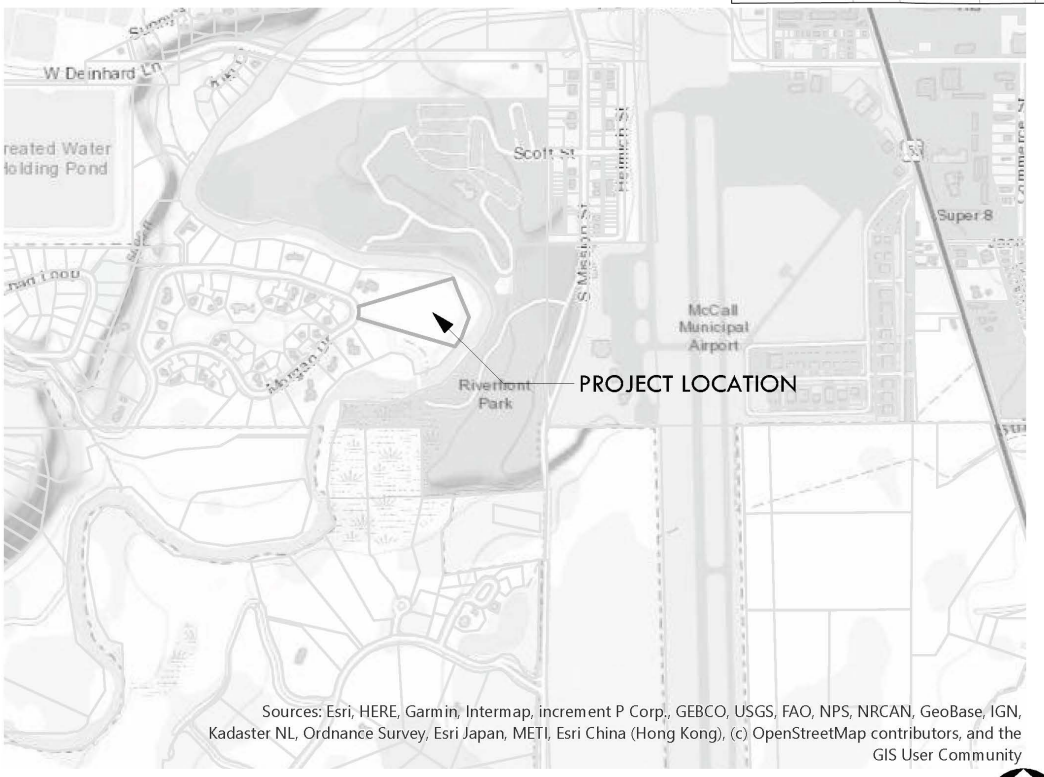
Mr. Eric M. Gerke
U.S. Army Corps of Engineers
Walla Walla District
Boise Regulatory Office
720 East Park Boulevard, Suite 245
Boise, Idaho 83712-7757

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with all terms and conditions of this permit, the permit is subject to suspension, modification, or revocation and you are subject to an enforcement action by this office.

I hereby certify that the work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of the said permit. The required mitigation was also completed in accordance with the permit conditions.

_____ _____

Signature of PERMITEE *DATE*

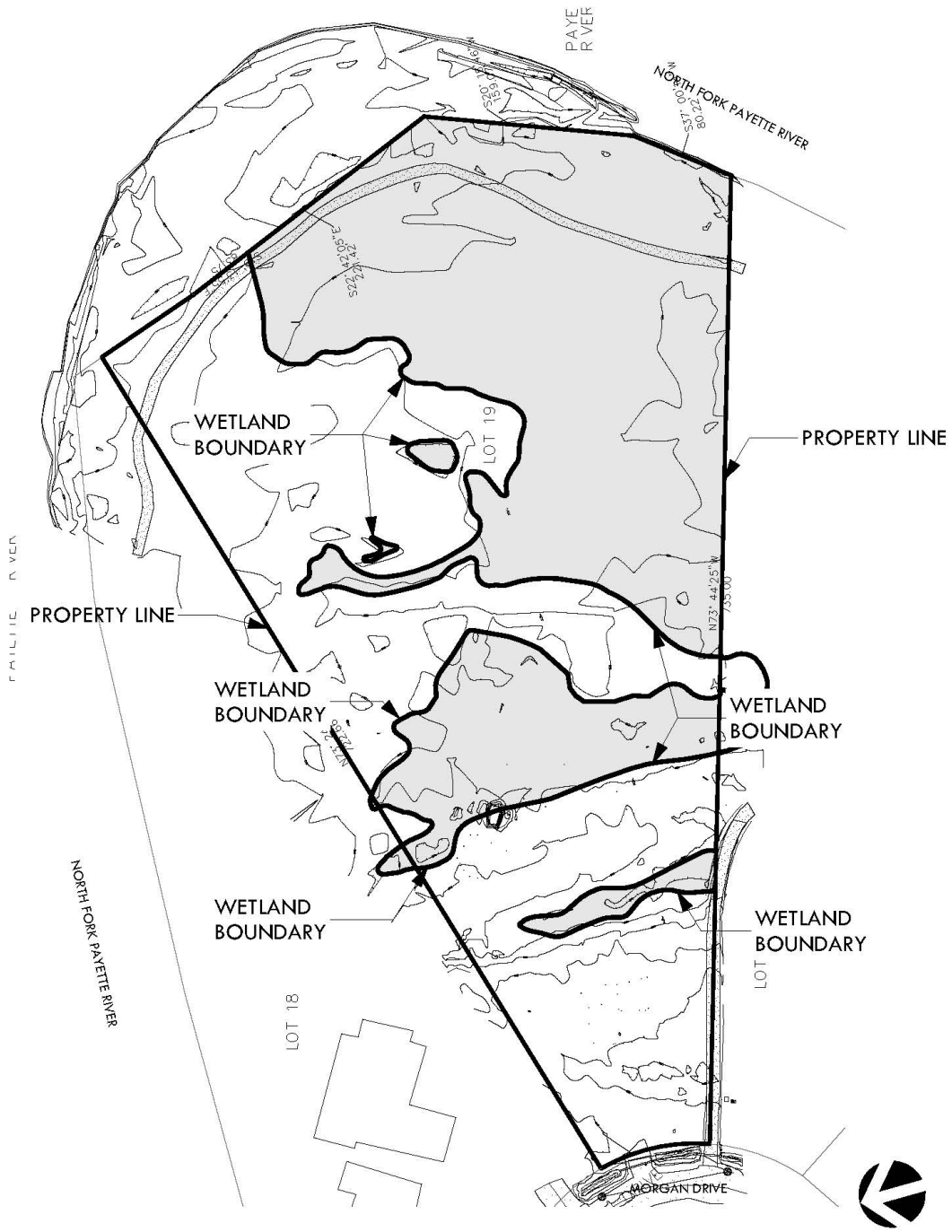


Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

NOT TO SCALE

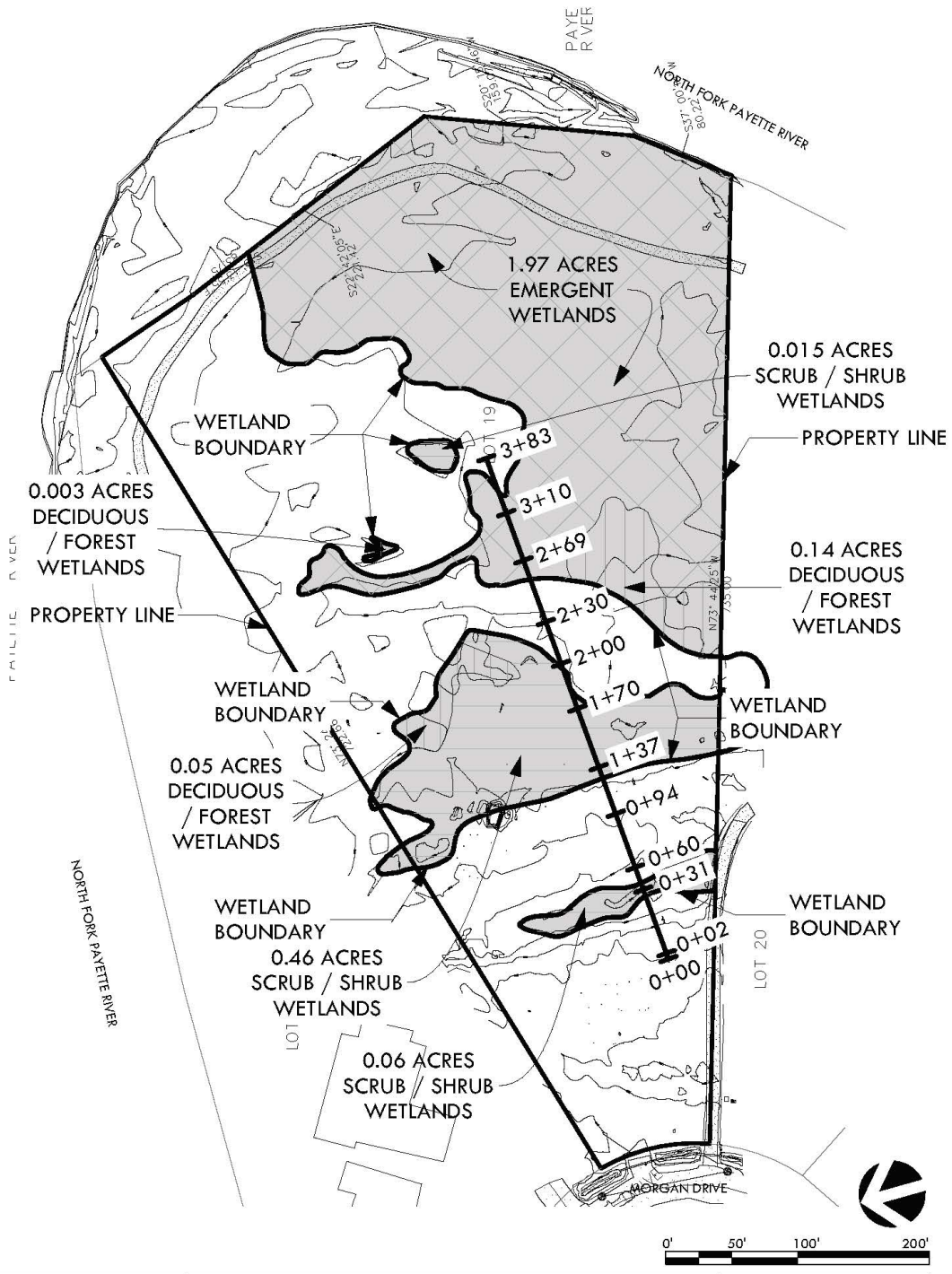
BIMcloud: s132-148-167-156 - BIMcloud Basic for ARCHICAD 23/SANDERS RIVER CROSSING

JAMES FRONK CONSULTING, LLC. 14028 NORWOOD RD PO BOX 576 McCALL, ID 83638 (208) 634-8093	VICINITY MAP SANDERS RESIDENCE 221 MORGAN DRIVE MCCALL ID 83638 RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2	FIGURE: 1 DRAWN BY: ES DATE: 8/24/2020



BIMcloud: s132-148-167-156 - BIMcloud Basic for ARCHICAD 23/SANDERS RIVER CROSSING

JAMES FRONK CONSULTING, LLC. 14028 NORWOOD RD PO BOX 576 McCALL, ID 83638 (208) 634-8093	SITE MAP SANDERS RESIDENCE 221 MORGAN DRIVE MCCALL ID 83638 RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2	FIGURE: 2 DRAWN BY: ES DATE: 8/24/2020



JAMES FRONK CONSULTING, LLC. 14028 NORWOOD RD PO BOX 576 McCALL, ID 83638 (208) 634-8093	WETLAND DELINEATION SANDERS RESIDENCE 221 MORGAN DRIVE MCCALL ID 83638 RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2	FIGURE: 3 DRAWN BY: ES DATE: 8/24/2020

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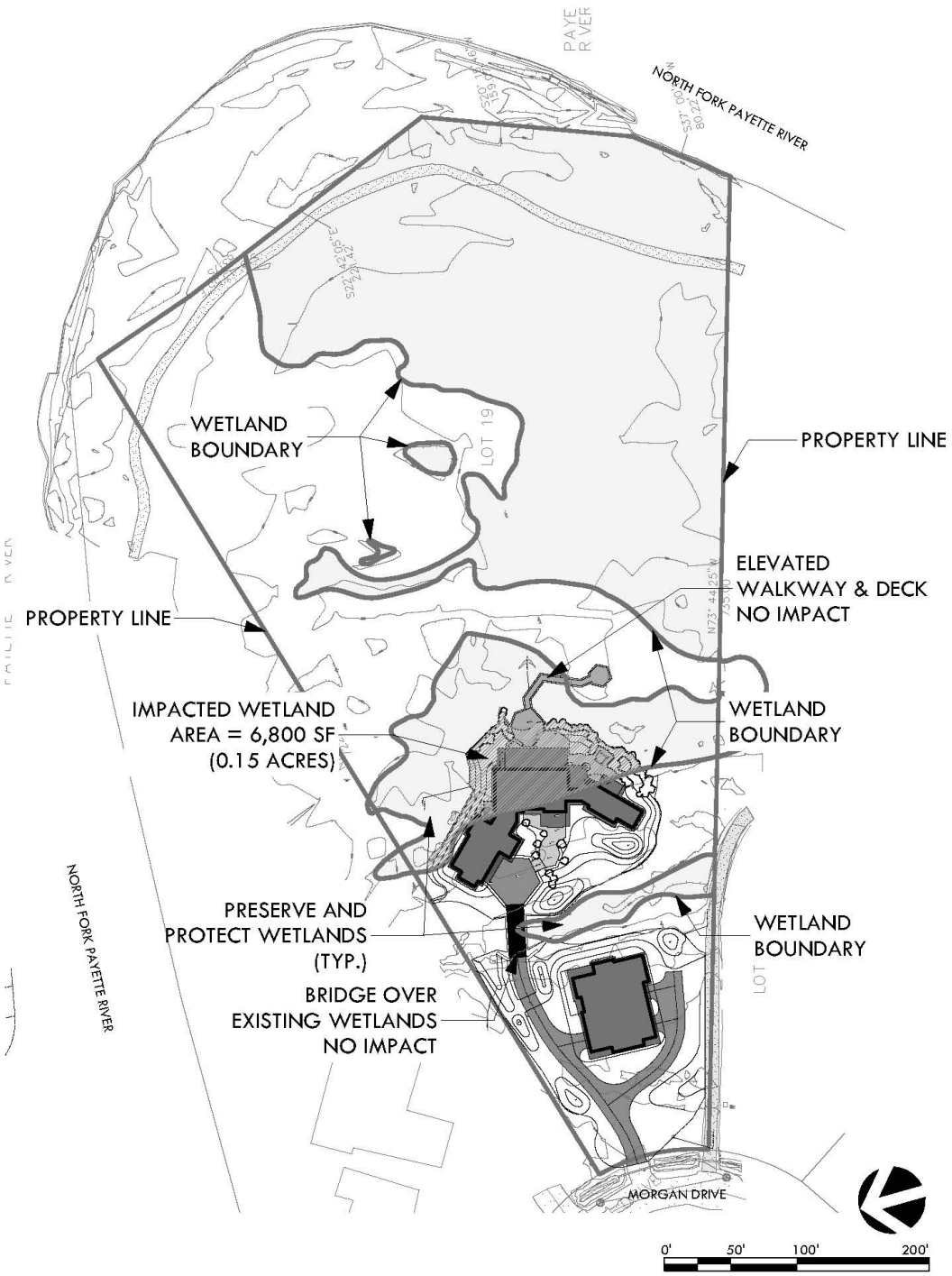

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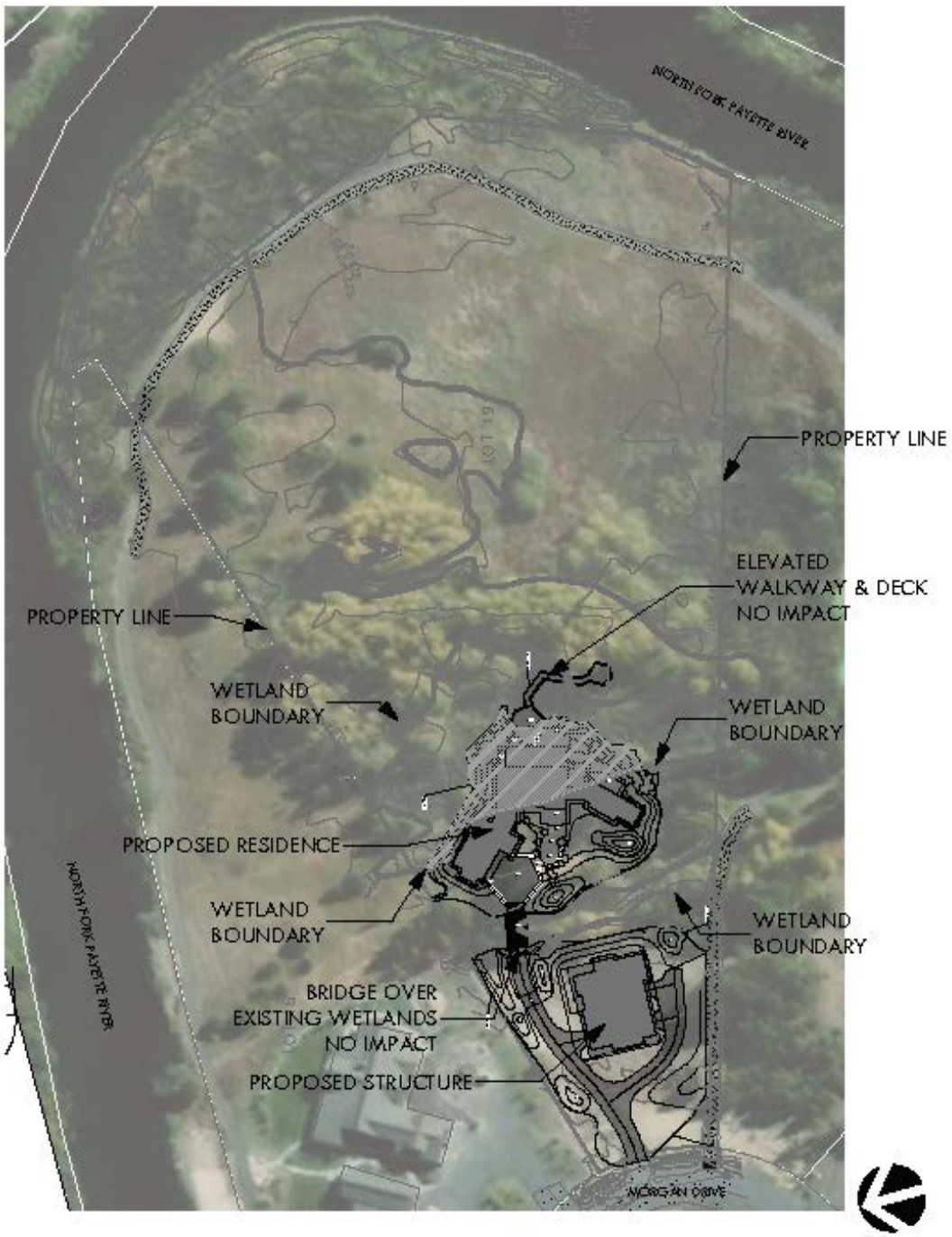
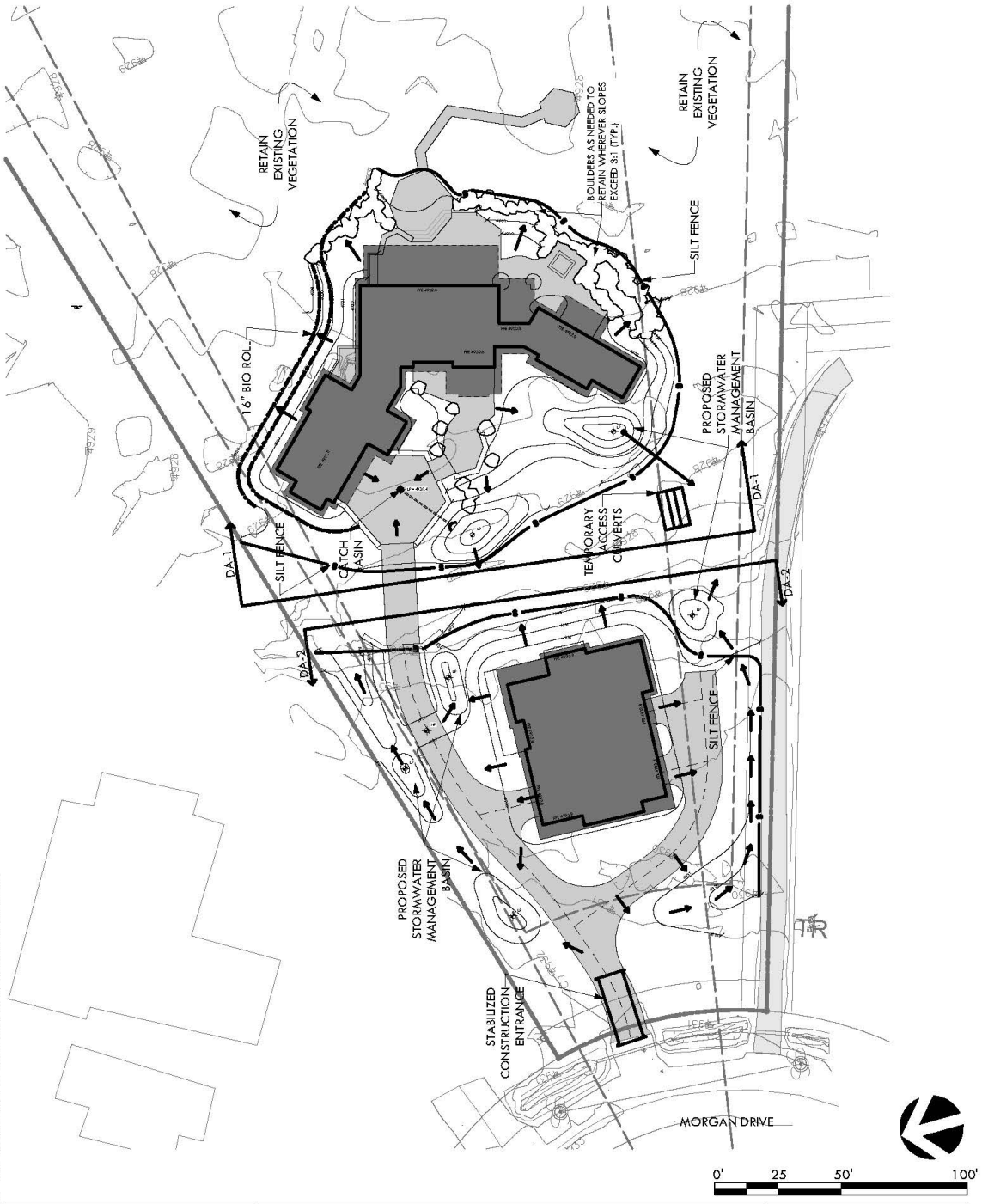
JAMES FRONK CONSULTING, LLC. 14028 NORWOOD RD PO BOX 576 McCALL, ID 83638 (208) 634-8093	WETLAND IMPACT WITH BUILDING SANDERS RESIDENCE 221 MORGAN DRIVE MCCALL ID 83638 RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2	FIGURE: 4 DRAWN BY: ES DATE: 8/24/2020

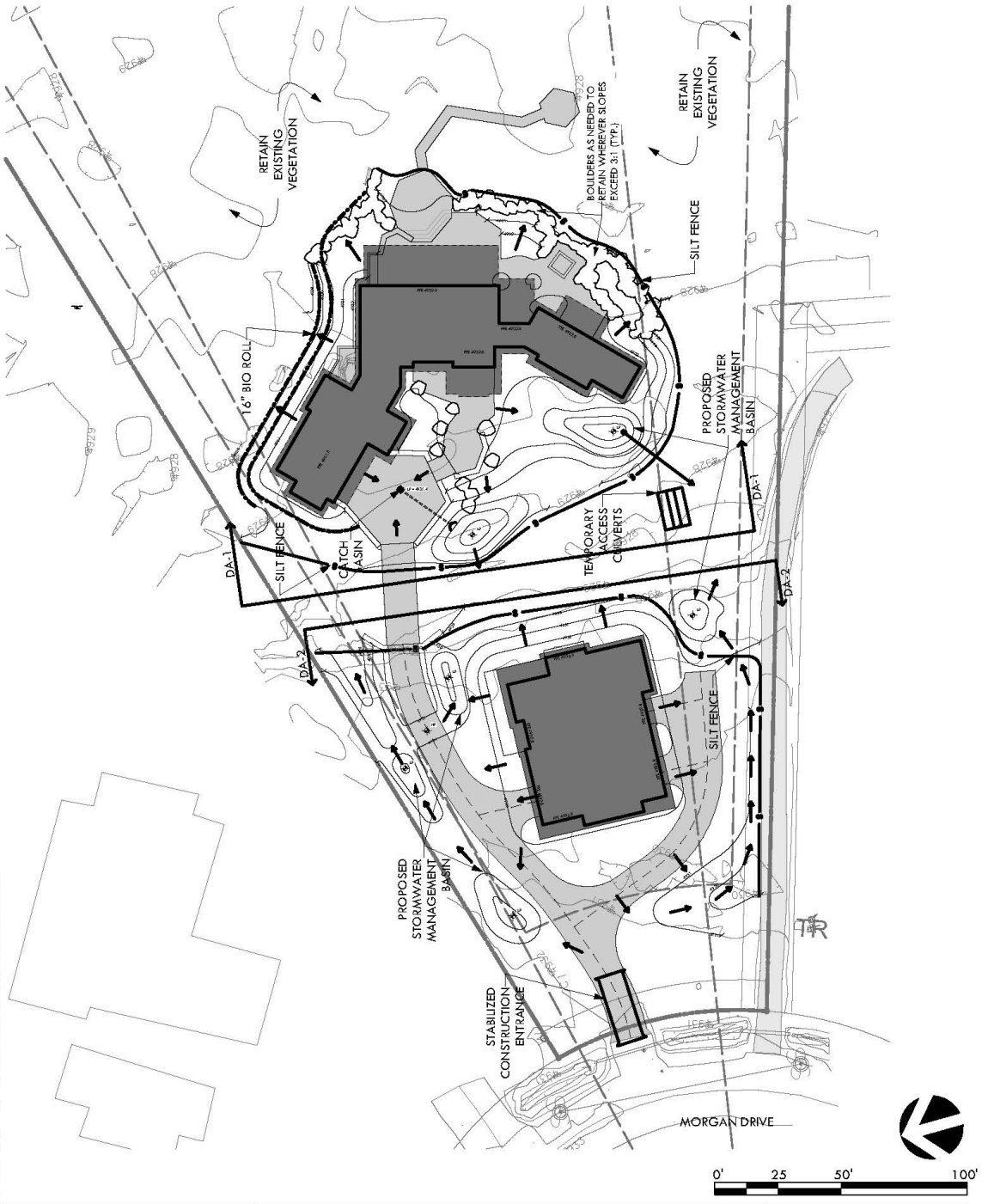


JAMES FRONK CONSULTING, LLC. 14028 NORWOOD RD PO BOX 576 McCALL, ID 83638 (208) 634-8093	WETLAND IMPACT WITH PHOTO SANDERS RESIDENCE 221 MORGAN DRIVE MCCALL ID 83638 RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2	FIGURE: 5 DRAWN BY: BS DATE: 8/24/2020



BIMcloud: s132-148-167-156 - BIMcloud Basic for ARCHICAD 23/SANDERS RIVER CROSSING

JAMES FRONK CONSULTING, LLC. 14028 NORWOOD RD PO BOX 576 McCALL, ID 83638 (208) 634-8093	EROSION CONTROL SANDERS RESIDENCE 221 MORGAN DRIVE MCCALL ID 83638 RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2	FIGURE: 7 DRAWN BY: ES DATE: 8/24/2020



BIMcloud: s132-148-167-156 - BIMcloud Basic for ARCHICAD 23/SANDERS RIVER CROSSING

JAMES FRONK CONSULTING, LLC. 14028 NORWOOD RD PO BOX 576 McCALL, ID 83638 (208) 634-8093	EROSION CONTROL SANDERS RESIDENCE 221 MORGAN DRIVE MCCALL ID 83638 RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2	FIGURE: 7 DRAWN BY: ES DATE: 8/24/2020

From: Griffith, Christen CIV USARMY CENWW (USA)
To: jamesfronkconsulting@gmail.com
Subject: RE: [Non-DoD Source] Permit Renewal - NWW-2020-00422-B03
Date: Monday, April 11, 2022 3:38:15 PM

Jim,

Projects which have committed resources or have gotten under contract such as this, may receive an additional 12 months from the expiration of the NWP to complete the work under the existing authorization.

In consideration of the circumstances I consider this project to be eligible for that extension and you can consider this email as approval to extend the existing authorization for another 12 months from the date of the expiration.

Should the project not be completed by that time or there is a change in design/ location or methods, you must coordinate with the Corp prior to implementing the project to determine if a new verification is needed.

Thank you,
Marve Griffith

From: jamesfronkconsulting@gmail.com <jamesfronkconsulting@gmail.com>
Sent: Monday, April 11, 2022 11:15 AM
To: Griffith, Christen CIV USARMY CENWW (USA) <Christen.M.Griffith@usace.army.mil>
Subject: [Non-DoD Source] Permit Renewal - NWW-2020-00422-B03

Marve,

The above permit expired on March 18, 2022. The client would like to renew the permit. There are no changes or additional wetland impacts from the previous permit. The reason for the delay was due to Covid related issues, these issues include the ability to find contractors to do the site work and residential house construction. In addition, the residential house contractors were having problems with acquiring materials for construction due to the Covid related supply chain issues. The above-mentioned construction delay issues have been resolved.

Please provide me direction on how to proceed.

Thank You,

Jim Fronk L.A.
James Fronk construction, LLC.
208 634 8093

FORSGREN Associates Inc.

December 07, 2022

Brian Parker
City of McCall
216 Park St
McCall, ID 83638

RE: Rivers Crossing, Lot 19 CLOMR – Community Acknowledgement Form

Dear Mr. Parker,

This correspondence letter is being sent to the City to review and provide signature of the revised FEMA-CLOMR Community Acknowledgement Form submitted on behalf of Dwain Sanders, owner of River's Crossing Lot 19.

The attached Community Acknowledgement Form requires your signature. Please acknowledge in your response that the City has received a copy of the revised CLOMR application dated Dec. 07, 2022, and supporting documents delivered to you by this certified mailed letter. I would be happy to share electronic copies of those materials upon request. Please confirm whether or not the City will review the revised CLOMR and sign the Community Acknowledgement Form and return it to me via email to (rmanning@forsgren.com).

Please let us know if you have additional questions.

Thank you,

Ron Manning, P.E., CFM

Enclosures
CLOMR application package

Cc:
Dwain Sanders
James Fronk
Steve Millemann

CLOMR PROJECT NARRATIVE

for Rivers Crossing – Lot 19

McCall, ID

December 07, 2022

Prepared By: Ronald Manning, P.E.

Prepared for:
Dwain Sanders
106 E Park St. Suite 214
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(209) 480-0340

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1.0 INTRODUCTION

This report summarizes the development and analysis of Hydrologic and Hydraulic conditions of the Payette River in support of the associated Conditional Letter of Map Revision application of effective FEMA flood insurance rate maps (FIRMs). This effort focuses on the portion of the Payette River approximately 2.6 miles downstream of the outlet of Payette Lake. The project site is located within the City of McCall. The Owner of Rivers Crossing Subdivision Lot 19 intends to elevate a portion of their property with fill and remove the filled area from the floodplain via the CLOMR process.

Figure 1. Area Map, Owner's parcel (approx.) shown in red.

1.1 Existing Structures and Roadways

There is a small bridge over the Payette River directly south of the project parcel which is represented in the effective FEMA hydraulic model. There is also a gravel nature path near the west edge of the parcel. No other existing structures or roadways are present within the project parcel.

1.2 Effective FEMA Products

The effective FEMA products for this area are dated February 2019. The project is located within firm panel (16085C0688C). The Flood Insurance Study (FIS) contains sufficient information about the hydrology and hydraulics for this section of the Payette River. An effective HEC-RAS hydraulic model was obtained from FEMA and was found to be viable for this analysis.

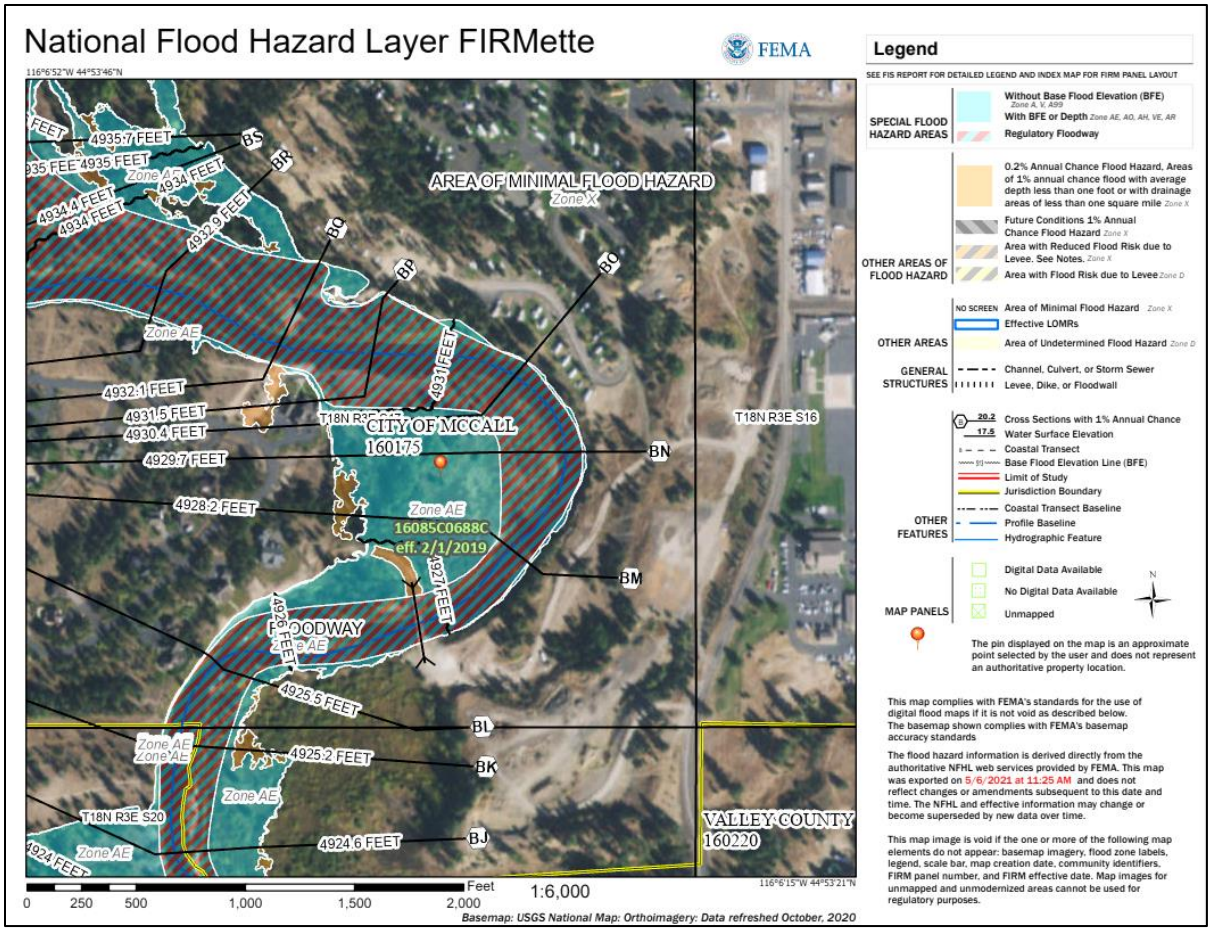


Figure 2. Effective FIRM

2.0 HYDROLOGY

This section outlines the hydrology information gathered to inform this CLOMR application. Upon review, it was determined the hydrology information published in the FEMA FIS was the best available data.

2.1 Payette River Watershed

The watershed upstream of this project drains an area of approximately 148.17 square-miles. The watershed of interest includes the City of McCall, ID and runs north in unincorporated Valley County and Idaho County. This segment of the Payette River is located within the City of McCall. The Figure 3. Payette River watershed above site. Figure 3 below shows the approximate watershed delineation above the project site.

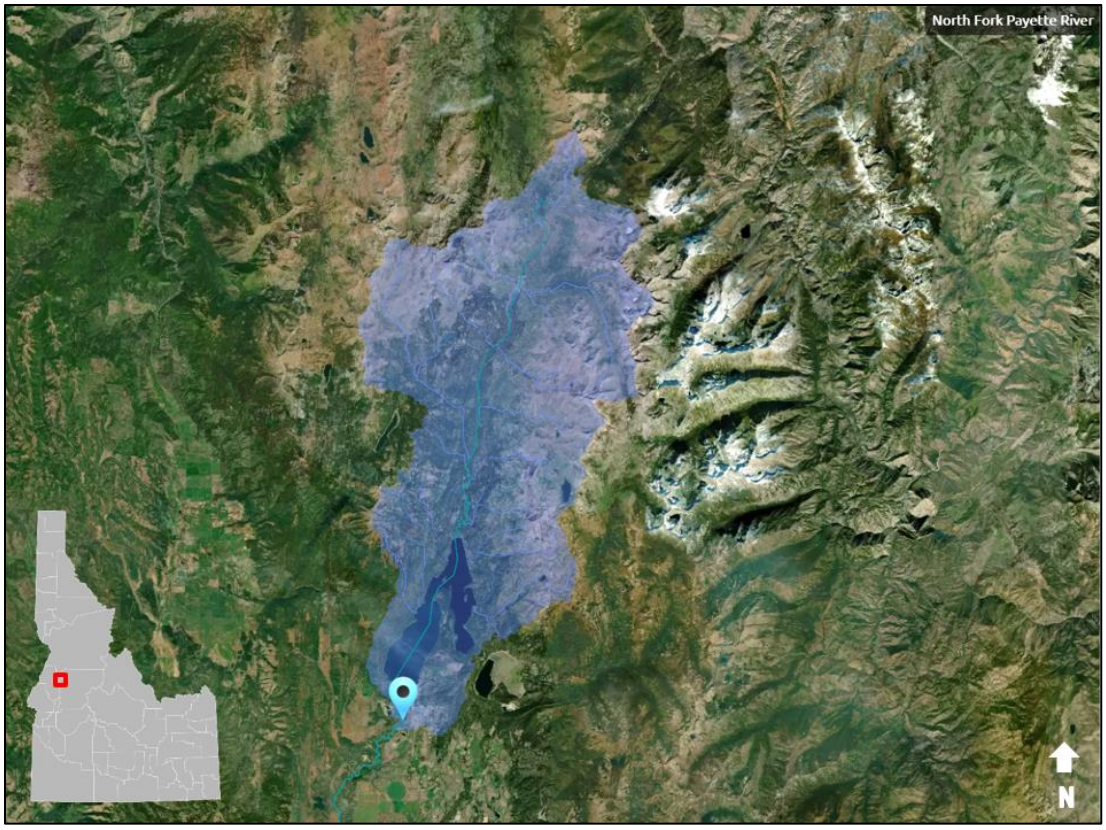


Figure 3. Payette River watershed above site.

2.2 Effective Hydrology Products

The FIS contained the following summary of discharge values for the Payette River gathered from gage station 13239000 (1941-2013), located approximately 2.2 miles upstream of the project site (Figure 4).

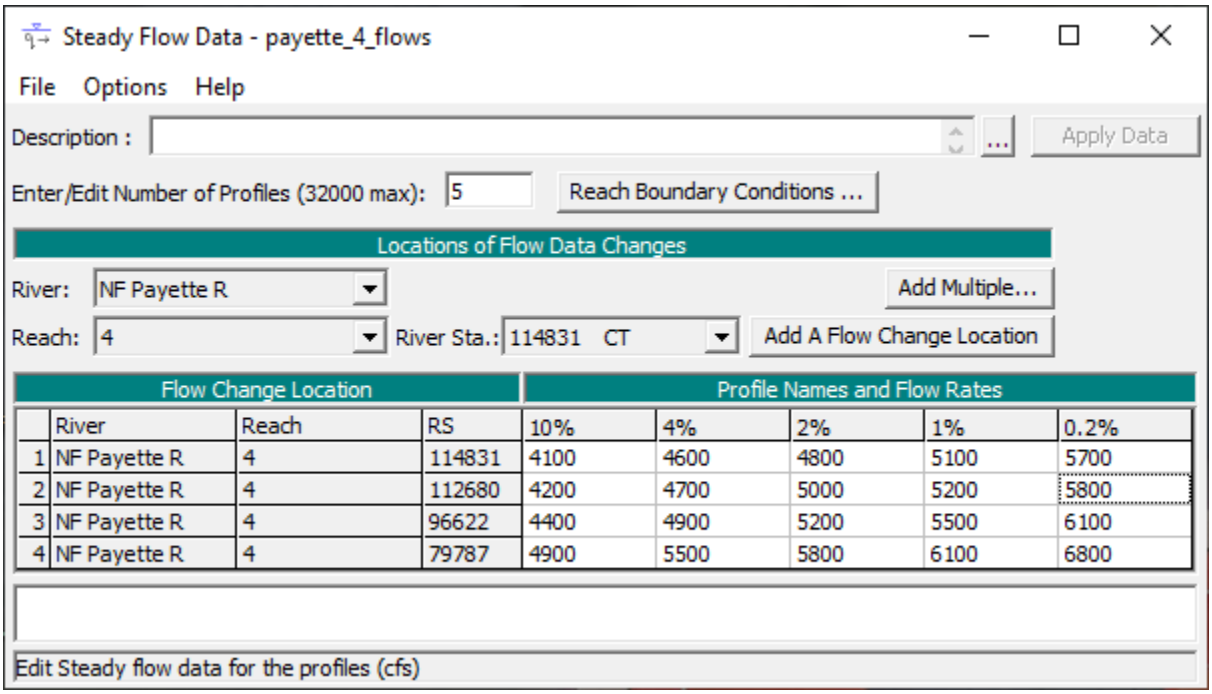
Table 10: Summary of Discharges *(continued)*

Flooding Source	Location	Drainage Area (square miles)	Peak Discharge (cfs)				
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
North Fork Payette River	Approx. 3.02 miles downstream of confluence with Williams Creek	157	4,400	4,900	5,200	5,500	6,100
North Fork Payette River	Approx. 0.05 miles upstream of confluence with Williams Creek	149	4,200	4,700	5,000	5,200	5,800
North Fork Payette River	At USGS gage 13239000	145	4,100	4,600	4,800	5,100	5,700

Figure 4. Peak discharge reported in Effective FIS.

The peak discharges for this section of the river in the effective model appeared different from values published in the FIS. Figure 5. below was observed in the effective model with RS 114831 corresponding to the location “At USGS gage 13239000” shown above. There is another flow increase at RS 112680 which corresponds to the values published for Williams Creek, and again at RS 96622, which is published in the FIS as “3.02 miles downstream of confluence with Williams Creek”.

It was decided to leave the flow values in the model as they were since the model results matched published water surface values.



	River	Reach	RS	10%	4%	2%	1%	0.2%
1	NF Payette R	4	114831	4100	4600	4800	5100	5700
2	NF Payette R	4	112680	4200	4700	5000	5200	5800
3	NF Payette R	4	96622	4400	4900	5200	5500	6100
4	NF Payette R	4	79787	4900	5500	5800	6100	6800

Figure 5. Peak discharge from Effective model

3.0 HYDRAULICS

3.1 Existing Site Hydraulic Conditions

Generally, the site appears undisturbed from its natural condition and is comprised of vegetation cover typical of natural portions of the Payette River in this vicinity. The parcel is located on the inside of a bend. A review of historical aerial imagery between 1998 and 2017 appears to show the riverbank has remained stable during that time.

LiDAR survey data collected in 2012 was obtained from the Idaho LiDAR Consortium. Based on collection date and comparison with HEC-RAS cross section elevations, we believe this terrain data were used as the basis for the effective model.

3.2 Effective Modeling Products

The effective HEC-RAS 4.1.0 model of the area was completed in April of 2013. A detailed study for this portion of Payette River (Reach 4) was carried out by the Strategic Alliance for Risk Reduction (STARR) team. Flows for the 10-, 25-, 50- ,100-, and 500-yr recurrence intervals were modeled. A floodway was also calculated in the HEC-RAS model. The following description was included in the model:

> Model Version: HEC-RAS version 4.1.0
> By: Strategic Alliance For Risk Reduction (STARR) - Lexington, KY
> Project Number: 173529050
> Project Name: Valley County, Idaho - Countywide FIRM Study

Case No. 11-10-0105S
February 2014
Updated November 2015
Channel cross-sections were based on survey data and a 2-ft Digital Elevation MAP (DEM)
Vertical Datum: NAVD 88
Horizontal Datum: NAD83
Geographical Coordinate System:
NAD83 State Plane Idaho West
Model may extend beyond limits of floodplain revision for tie in purposes.

Figure 6. Effective HEC-RAS model project description

Figure 7. Owner's parcel (red) shown with effective FEMA cross sections (green)

3.3 Duplicate Effective, Corrected Effective & Pre-Project Models

The effective model results compared adequately with published results. Therefore, no duplicate effective model was created. Also, no substantial changes appear to have occurred in the area to warrant a corrected effective model. For this CLOMR, the effective models (payette_4_run & payette_4_fldwy) were used as-is and not corrected.

The current effective models were also used as the pre-project condition since little to no man-made changes appear to have occurred in the vicinity of the project since the effective model was published.

Table 24: Floodway Data *(continued)*

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
BE	95,613	244	1,080	5.1	4919.8	4919.8	4919.8	0.0
BF	96,332	290	1,261	4.4	4921.0	4921.0	4921.1	0.1
BG	96,622	146	807	6.8	4921.3	4921.3	4921.4	0.1
BH	97,366	142	862	6.0	4923.2	4923.2	4923.3	0.1
BI	98,035	164	866	6.0	4924.0	4924.0	4924.5	0.5
BJ	98,454	156	1,101	4.7	4924.6	4924.6	4925.3	0.7
BK	98,806	207	1,414	3.7	4925.2	4925.2	4925.8	0.6
BL	99,106	173	852	6.1	4925.5	4925.5	4926.0	0.5
BM	100,184	123	654	7.9	4928.2	4928.2	4928.3	0.1
BN	100,560	272	939	5.5	4929.7	4929.7	4929.7	0.0
BO	100,870	222	902	5.8	4930.4	4930.4	4930.5	0.1
BP	101,345	472	1,569	3.3	4931.5	4931.5	4931.8	0.3
BQ	101,650	363	1,276	4.1	4932.1	4932.1	4932.2	0.1
BR	102,081	324	1,172	4.4	4932.9	4932.9	4933.0	0.1
BS	102,765	548	1,472	3.5	4934.4	4934.4	4934.4	0.0
BT	103,372	390	1,179	4.4	4935.7	4935.7	4935.7	0.0
BU	104,050	183	831	6.3	4937.2	4937.2	4937.3	0.1
BV	104,619	106	627	8.3	4938.8	4938.8	4938.8	0.0
BW	104,843	128	766	6.8	4940.1	4940.1	4940.1	0.0
BX	105,111	123	697	7.5	4940.9	4940.9	4941.0	0.1
BY	105,364	104	605	8.6	4941.9	4941.9	4942.0	0.1

[1]FEET UPSTREAM OF CONFLUENCE WITH CASCADE RESERVOIR. CASCADE RESERVOIR IS LOCATED APPROXIMATELY 25,600 FEET DOWNSTREAM OF SMYLIE LANE

TABLE 24 — FEDERAL EMERGENCY MANAGEMENT AGENCY — VALLEY COUNTY, IDAHO — AND INCORPORATED AREAS — FLOODWAY DATA — NORTH FORK PAYETTE RIVER

Figure 8. Floodway data for cross sections with project site highlighted

3.4 Proposed Site Conditions & Modeling

The applicant proposes to elevate an area within the parcel by placing fill. The fill extent will be confined to the owner's property. The area to be filled is located completely outside of the regulatory floodway. The effective model was used as the basis for modification. A proposed surface was generated based on design plans by others and imported into HEC-RAS. The effective model was duplicated, and cross sections modified as described below. The proposed conditions model ran to completion without errors.

XS - 100560 – Ground modified to reflect the proposed fill. Top of fill set at 4931.00 elevation
XS – 100870 - Ineffective flow area was modified to reflect fill immediately downstream.

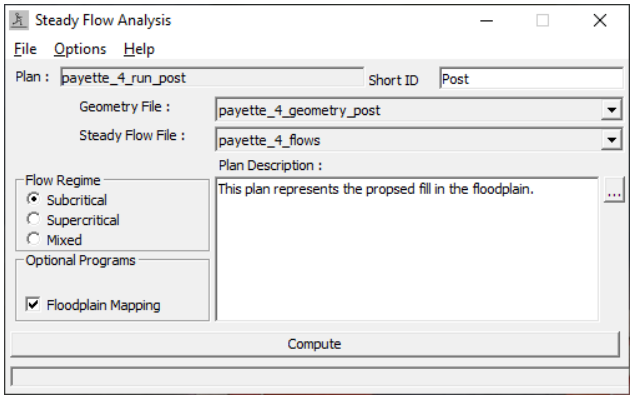


Figure 9. Post-project HEC-RAS plan

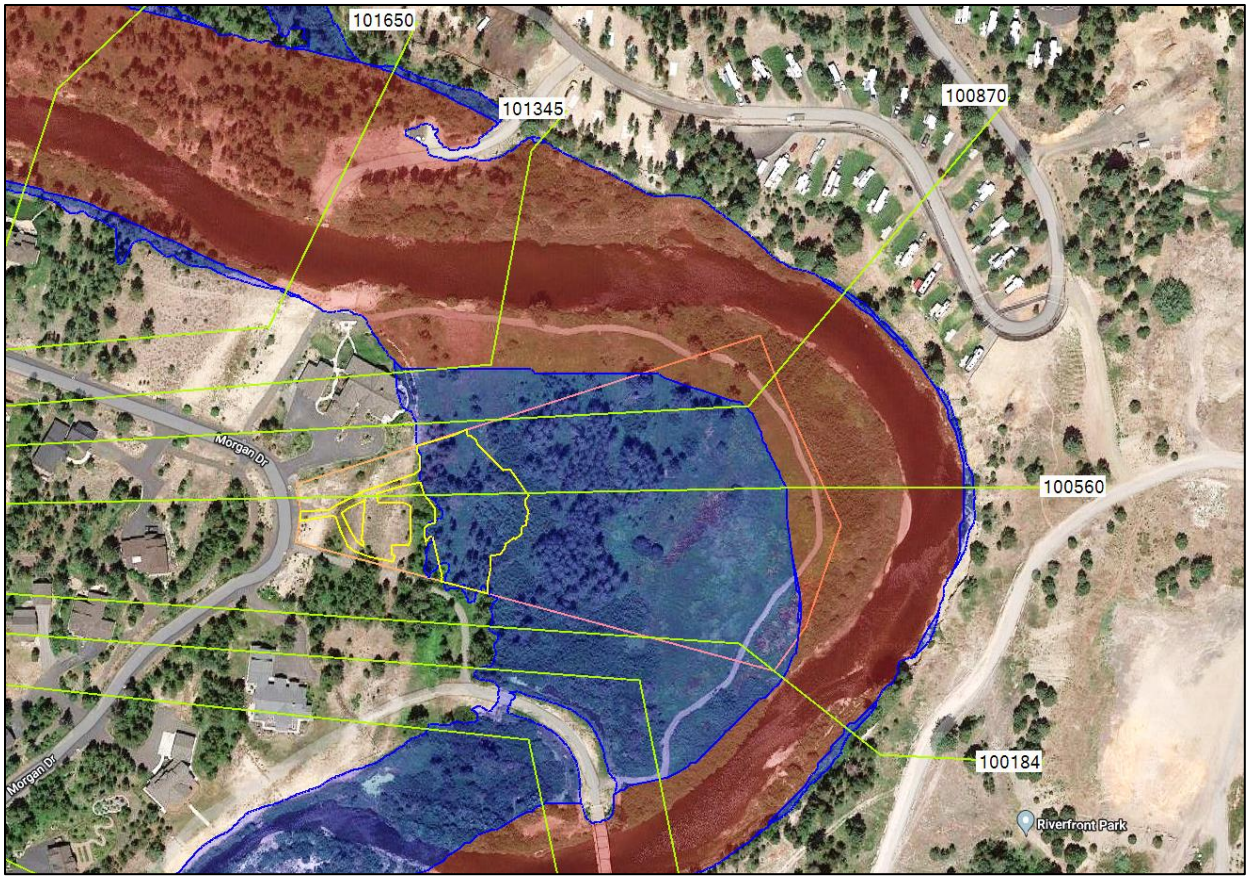


Figure 10. Plan view of Floodway (red), Floodplain (blue), and proposed fill extent (yellow).

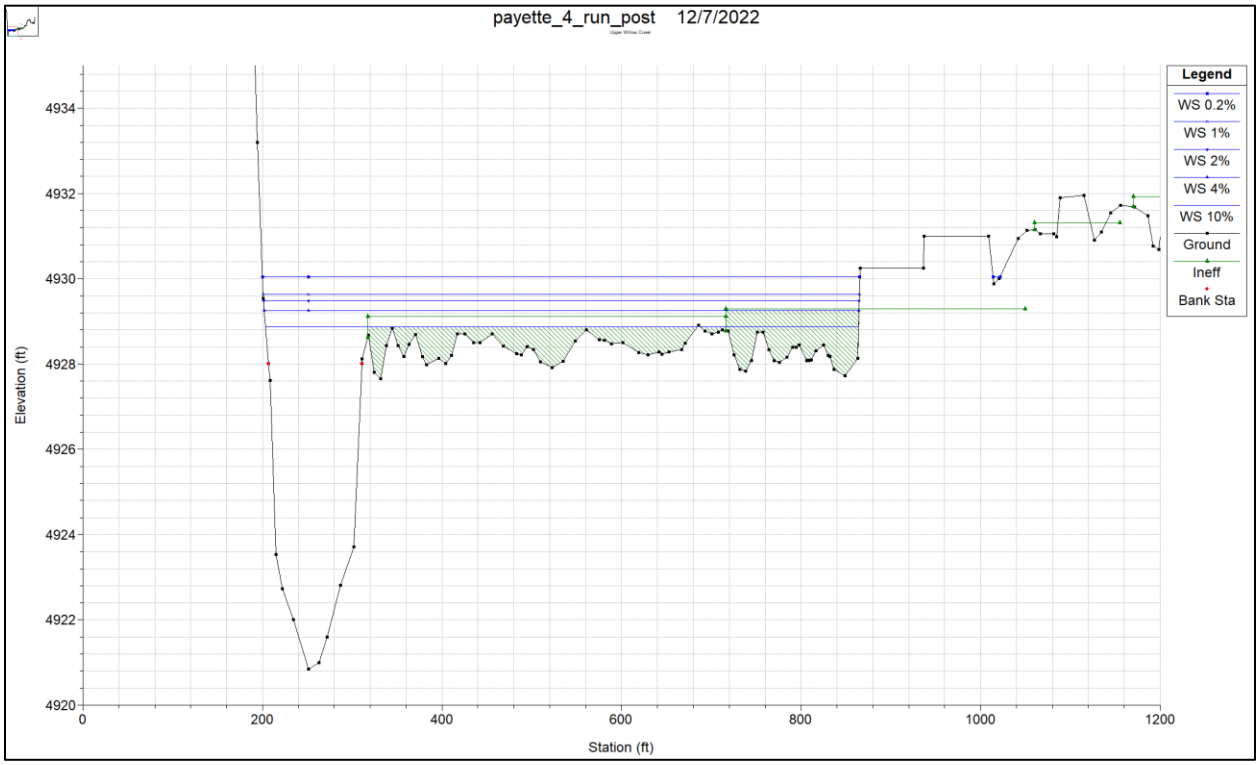


Figure 11. Post-Project cross section XS 100560 BN.

3.5 Water Surface Elevation Comparison

Modeling results were compared between the effective plan and the post-fill plan for the 0.1 (10-yr), 0.04 (25-yr), 0.02 (50-yr), 0.01(100-yr), 0.002 (500-yr) events. Since the fill is only being placed in the floodplain, there was no impact to the regulatory floodway Water Surface Elevation (WSE) or delineation.

3.5.1 Non-Floodway Simulations

The project does not affect the 10- and 25-yr events as the fill is situated outside the inundation extent of these events and are not presented here. The project does cause slight increases to water surface elevations for the 50-, 100-, and 500-yr events as summarized below. The post-project inundation boundaries were computed and compared and found no significant difference in WSE or floodplain delineations within the project area.

Table 1. WSE comparison of Pre- and Post- Project model results

	50-year			100-year			500-year		
HEC-RAS XS	Published BFE	Post-Project BFE	Diff. (ft)	Published BFE	Post-Project BFE	Diff.(ft)	Published BFE	Post-Project BFE	Diff. (ft)
101650 BQ	4,931.97	4,932.00	0.03	4,932.05	4,932.08	0.03	4,932.27	4,932.34	0.07
101345 BP	4,931.45	4,931.51	0.06	4,931.53	4,931.60	0.07	4,931.79	4,931.91	0.12
100870 BO	4,930.24	4,930.25	0.01	4,930.36	4,930.37	0.01	4,930.69	4,930.69	0.00
100560 BN	4,929.50	4,929.49	-0.01	4,929.65	4,929.64	-0.01	4,930.06	4,930.04	-0.02
100184 BM	4,928.08	4,928.08	0.00	4,928.21	4,928.21	0.00	4,928.58	4,928.58	0.00
99892	4,927.10	4,927.10	0.00	4,927.22	4,927.22	0.00	4,927.59	4,927.59	0.00

3.5.2 Floodway Simulation

Since the fill is being placed outside of the floodway encroachment boundary, the model showed no difference between the effective and post-fill scenarios.

Profile Output Table - Standard Table 1

File Options Std. Tables Locations Help

HEC-RAS Locations: User Defined Profile: Fldwy Reload Data

River	Reach	River Sta	Profile	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
					(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
NF Payette R	4	102765 BS	Fldwy	fldwy	5200.00	4926.79	4934.43	4933.11	4934.63	0.0019	3.53	1471.69	547.62	0.38
NF Payette R	4	102765 BS	Fldwy	fldwy_post	5200.00	4926.79	4934.43	4933.11	4934.63	0.0019	3.53	1471.69	547.62	0.38
NF Payette R	4	102081 BR	Fldwy	fldwy	5200.00	4924.86	4932.99	4931.21	4933.30	0.0020	4.44	1172.32	324.11	0.41
NF Payette R	4	102081 BR	Fldwy	fldwy_post	5200.00	4924.86	4932.99	4931.21	4933.30	0.0020	4.44	1172.32	324.11	0.41
NF Payette R	4	101650 BQ	Fldwy	fldwy	5200.00	4923.64	4932.22	4929.59	4932.48	0.0017	4.07	1276.25	362.98	0.38
NF Payette R	4	101650 BQ	Fldwy	fldwy_post	5200.00	4923.64	4932.22	4929.59	4932.48	0.0017	4.07	1276.25	362.98	0.38
NF Payette R	4	101345 BP	Fldwy	fldwy	5200.00	4923.14	4931.84	4929.97	4932.01	0.0012	3.31	1569.34	472.15	0.32
NF Payette R	4	101345 BP	Fldwy	fldwy_post	5200.00	4923.14	4931.84	4929.97	4932.01	0.0012	3.31	1569.34	472.15	0.32
NF Payette R	4	100870 BO	Fldwy	fldwy	5200.00	4922.37	4930.52	4928.28	4931.12	0.0027	6.31	902.13	222.07	0.50
NF Payette R	4	100870 BO	Fldwy	fldwy_post	5200.00	4922.37	4930.52	4928.28	4931.12	0.0027	6.31	902.13	222.07	0.50
NF Payette R	4	100560 BN	Fldwy	fldwy	5200.00	4920.85	4929.64	4926.91	4930.37	0.0021	6.96	939.50	272.42	0.47
NF Payette R	4	100560 BN	Fldwy	fldwy_post	5200.00	4920.85	4929.64	4926.91	4930.37	0.0021	6.96	939.50	272.42	0.47
NF Payette R	4	100184 BM	Fldwy	fldwy	5200.00	4919.00	4928.30	4926.81	4929.28	0.0040	7.95	654.34	122.64	0.61
NF Payette R	4	100184 BM	Fldwy	fldwy_post	5200.00	4919.00	4928.30	4926.81	4929.28	0.0040	7.95	654.34	122.64	0.61

Total flow in cross section.

Figure 12. Floodway Plan results comparison

4.0 ENDANGERED SPECIES ACT COMPLIANCE

Information for Planning and Consultation (IPaC) from U.S. Fish and Wildlife was used to identify endangered species in the area of study. It was found that there are no critical habitats at this location. Northern Idaho Ground Squirrels were listed as potentially being affected by activities in this location. Eight species of migratory birds were listed either because they are on the USFWS Birds of Conservation Concern (BCC) or because they require special attention in the project location. The list includes Bald Eagle, Golden Eagle, Cassin's Finch, Clark's Grebe, Lesser Yellowlegs, Marbled Godwit, Olive-sided Flycatcher, and the Rufous Hummingbird. The Bald Eagle and Golden Eagle were included because of the Eagle Act and is not a BCC. The remaining six species were included because they are BCCs throughout their range in the continental USA and may breed in our project area.
The project area also overlaps with several wetlands including: PEM1A, and PSSA. (Subject to Regulation)

A separate memo documenting ESA compliance is being included in the CLOMR.

River Crossing Lot 19

CITY OF MCCALL, ID

Topographic Work Map

Date Printed: 12/8/2022

Symbol Legend

- Tie-In Point
- S_XS
- Existing Contour (10ft)
- Existing Contour (2ft)
- Parcel Boundary

Revised

- 500-yr
- 100-yr
- FLOODWAY

Effective

- 100-yr
- 500-yr
- FLOODWAY

N W E S

0 80 160 320 480 Feet

PROFESSIONAL ENGINEER LICENSED 17211 12/7/22 STATE OF IDAHO RONALD MANNING III

FORSGREN Associates Inc.

Information as displayed on map is for Planning Purposes only. The data is approximate in terms of content and location and has been sourced from local, state, and national government agencies. Please contact Forsgren Associates Inc. with questions. 801.364.4785

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

BR
BQ
4932.5
BP
4931
4930.4
BO
ZONE AE
S MISSION ST
XS - 102765
XS - 102081
XS - 101650
XS - 101345
XS - 100870
4929.7
XS - 100560
BN
4928.2
XS - 100184
XS - 99892
4927
XS - 99713
4926
BM
XS - 99106
Bridge

Date Printed: 12/8/2022

River Crossing Lot 19

CITY OF MCCALL, ID

Annotated FIRM

N
W
E
S

0 80 160 320 480 Feet

Symbol Legend

- Tie-In Point
- S_XS
- Parcel Boundary

Revised

- 500-yr
- 100-yr
- FLOODWAY

Panel No.16085C0688C

FORSGREN Associates Inc.

Information as displayed on map is for Planning Purposes only. The data is approximate in terms of content and location and has been sourced from local, state, and national government agencies. Please contact Forsgren Associates Inc. with questions. 801.364.4785

Online Letter of Map Change

LOMC Application

Application ID: R3996718386956 **Revision**

Revision Review

Project Type

Project Type: CLOMR

Payment Total

Fee: $7000.00 (CLOMR Based on Levee, Berm, or Other Structural Measures)

Project Name/Identifier

Project Name/Identifier: Rivers Crossing Lot 19

Community Information

State, District or Territory:	ID
County:	Valley County
Community Name:	MCCALL, CITY OF
Map Panel Number - Effective Date:	16085C0688C - 02/01/2019
CID:	160175

Flooding

Flooding Source: Payette River
Types of Flooding: Riverine

Basis for Request

The basis for this revision request is: Base Map Changes , Physical Change

Zone Designation

FEMA Zone designations affected: AE

Revision Structures

Revision Structures

The area of revision encompasses the following structures: Fill

Primary Contact Information

Title:	Mr.
First Name:	Ron
Last Name:	Manning
Address 1:	1109 W. Myrtle St.
Address 2:	Ste 300
City:	Boise
State, District or Territory:	ID
ZIP Code:	83702
E-mail Address:	rmanning@forsgren.com
Company/Organization:	Forsgren Associates, Inc
Phone:	208-342-3144

Community Official Information

Title:	Mr.
First Name:	Brian
Last Name:	Parker
Professional Title:	city Planner
Community Name:	MCCALL, CITY OF
Address 1:	216 Park St
City:	McCall
State, District or Territory:	ID
ZIP Code:	83638
Phone:	208-634-4256

As the CEO or designee responsible for the floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement for when fill is placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. For conditional LOMR request, the applicant has documented Endangered Species Act (ESA) compliance to DHS/FEMA prior to DHS/FEMA's review of the Conditional LOMR application. For LOMR request, I acknowledge that compliance with sections 9 and 10 of the ESA has been achieved independently of DHS/FEMA's process. For actions authorized, funded, or being carried out by Federal or State agencies, existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44 CFR 65.2(c), and that we have available upon request by DHS/FEMA, all analyses and documentation used to make this determination.

Community Official Signature: _____

Date: _____

Certification by Registered Professional Engineer and/or Land Surveyor

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms instruction. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

First Name:	Ron
Last Name:	Manning
License Number:	Idaho 17211
Expiration Date:	12/31/2023
Company Name:	Forsgren Associates, Inc.
E-mail Address:	rmanning@forsgren.com
Telephone Number:	916-225-9167
Fax Number:	
Certifier's Signature:	
Date:	12/07/2022

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
BOISE REGULATORY OFFICE
720 EAST PARK BOULEVARD, SUITE 245
BOISE, IDAHO 83712-7757

December 8, 2023

WALLA WALLA DISTRICT
REGULATORY DIVISION

SUBJECT: NWW-2020-00422, Dwain and Cindy Sanders: Construct Residential Home, Wetlands Abutting Payette River

Dwain and Cindy Sanders
2411 S. Koster Road
Tracy, California, 95304

Dear Mr. and Mrs. Sanders:

We have determined that your proposed project, Dwain and Cindy Sanders: Construct Residential Home, Wetlands Abutting Payette River, is authorized in accordance with Department of the Army (DA) **Nationwide Permit (NWP) No. 29: Residential Developments**. This project is located at 221 Morgan Drive, within Section 17 of Township 8 North, Range 3 East, near coordinates 44.8927º N latitude and -116.1095º W longitude, in McCall, Valley County, Idaho. Please refer to File Number NWW-2020-00422 in all future correspondence with our office regarding this project.

Project activities include the discharge of fill material within wetlands adjacent to North Fork Payette River, which may be considered waters of the United States. The purpose of the proposed project is to construct a single-family residence and detached garage with living quarters. The work will entail the discharge of 968 cubic yards of fill material to construct the residential building pad and will result in the loss of 0.15 acres of PSS wetlands. Additional work entails the construction of 0.30 acres of PSS wetlands as part of the compensatory mitigation plan titled: *Sanders Property Rivers Crossing Subdivision Mitigation Plan dated October 17, 2023*. All work shall be done in accordance with the enclosed drawings, titled: *Sanders Residence Maps and Designs,* dated *August 24, 2020.*

AUTHORITY

DA permit authorization is necessary because your project may involve the discharge of fill material into waters of the U.S. This authorization is outlined in Section 404 of the Clean Water Act (33 U.S.C. 1344).

PERMIT CONDITIONS

You must comply with all general, regional, and special conditions, for this verification letter to remain valid and to avoid possible enforcement actions. The general and regional permit conditions for *NWP No. 29: Residential Developments* are attached and also available online[1]. In addition, you must also comply with the special conditions listed below.

The following Special Conditions include:

Special Condition 1: Permittee shall mitigate for the impacts to 0.15 acres of PSS wetlands by enhancing and establishing wetlands on the parcel in accordance with the approved plan titled: *Sanders Property Rivers Crossing Subdivision Mitigation Plan dated October 17, 2023*.

Special Condition 2: Upon construction of the mitigation site, the Permittee shall submit a monitoring report to the Corps by January 1st of each year following construction for a period of three years or until the Corps has determined the mitigation site has met its performance standards as described in *Sanders Property Rivers Crossing Subdivision Mitigation Plan dated October 17, 2023*.

Special Condition 3: The permittee is responsible for all work done by any contractor. Permittee shall ensure any contractor who performs the work is informed of and follows all the terms and conditions of this authorization, including any Special Conditions listed above. Permittee shall also ensure these terms and conditions are incorporated into engineering plans and contract specifications.

WATER QUALITY CERTIFICATION

You must also comply with the conditions detailed in the attached Section 401 Water Quality Certification (WQC) issued by the Idaho Department of Environmental Quality (IDEQ) on December 4, 2020. If you have any questions regarding the conditions set forth in the WQC, please contact IDEQ directly at 208-373-0550, Boise Regional Office.

COMPLIANCE CERTIFICATION

Nationwide Permit General Condition 30 (Compliance Certification) requires that every permittee who has received NWP verification must submit a signed certification regarding the completed work and any required mitigation. This Compliance Certification form is enclosed for your convenience and must be completed and returned to us within 30 days of your project's completion.

[1] http://www.nww.usace.army.mil/Business-With-Us/Regulatory-Division/Nationwide-Permits/

LIMITATIONS OF THIS VERIFICATION

This letter of authorization does not convey any property rights, or any exclusive privileges and does not authorize any injury to property or excuse you from compliance with other Federal, State, or local statutes, ordinances, regulations, or requirements which may affect this work.

EXPIRATION OF THIS VERIFICATION

This verification is valid until **March 14, 2026**, unless the NWP is modified, suspended or revoked. If your project, as permitted under this NWP verification, is modified in any way you must contact our office prior to commencing any work activities. In the event that you have not completed construction of your project by **March 14, 2026**, please contact us at least 60-days prior to this date. A new application and verification may be required.

SERVICE SURVEY

We actively use feedback to improve our delivery and provide you with the best possible service. If you would like to provide feedback, please take our online survey[2]. If you have questions or if you would like a paper copy of the survey, please contact the Walla Walla District Regulatory. For more information about the Walla Walla District Regulatory program, you can visit us online[3].

If you have any questions or need additional information about this permit authorization, you can contact me by phone at 208-433-4469, by mail at the address in the letterhead, or email at sarah.v.windham@usace.army.mil. For informational purposes, a copy of this letter has been sent to: Chase Cusack with the Idaho Department of Environmental Quality, Katie Gibble with the Idaho Department of Water Resources and James Fronk, designated agent with James Fronk Consulting, LLC.

Sincerely,

Sarah V. Windham

Sarah V. Windham
Project Manager, Regulatory Division

[2] https://regulatory.ops.usace.army.mil/customer-service-survey/
[3] http://www.nww.usace.army.mil/Business-With-Us/Regulatory-Division/

Encls

Transfer of Nationwide Permit Form
Compliance Certification
Maps and Drawings: *Sanders Residence Maps and Designs,* dated *August 24, 2020.*
Nationwide Permit No. 29: Residential Developments General and Regional Conditions
IDEQ General Water Quality Certification dated December 04, 2020

TRANSFER OF NATIONWIDE PERMIT

When the structures or work authorized by this Nationwide Permit, **NWW-2020-00422 Dwain and Cindy Sanders: Construct Residential Home, Wetlands Abutting Payette River**, are still in existence at the time the property is transferred. The terms and conditions of this Nationwide Permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this Nationwide Permit, the associated liabilities and compliance with the terms and conditions the transferee must sign and date below.

Name of New Owner:

Street Address:

Mailing Address:

City, State, Zip:

Phone Number:

_____ _____

Signature of TRANSFEREE *DATE*

COMPLIANCE CERTIFICATION

US Army Corps of Engineers
Walla Walla District

Permit Number: NWW-2020-00422

Name of Permittee: Dwain and Cindy Sanders

Date of Issuance: December 8, 2023

Upon completion of the activity authorized by this permit and any mitigation required by the permit, please sign this certification and return it to the following address:

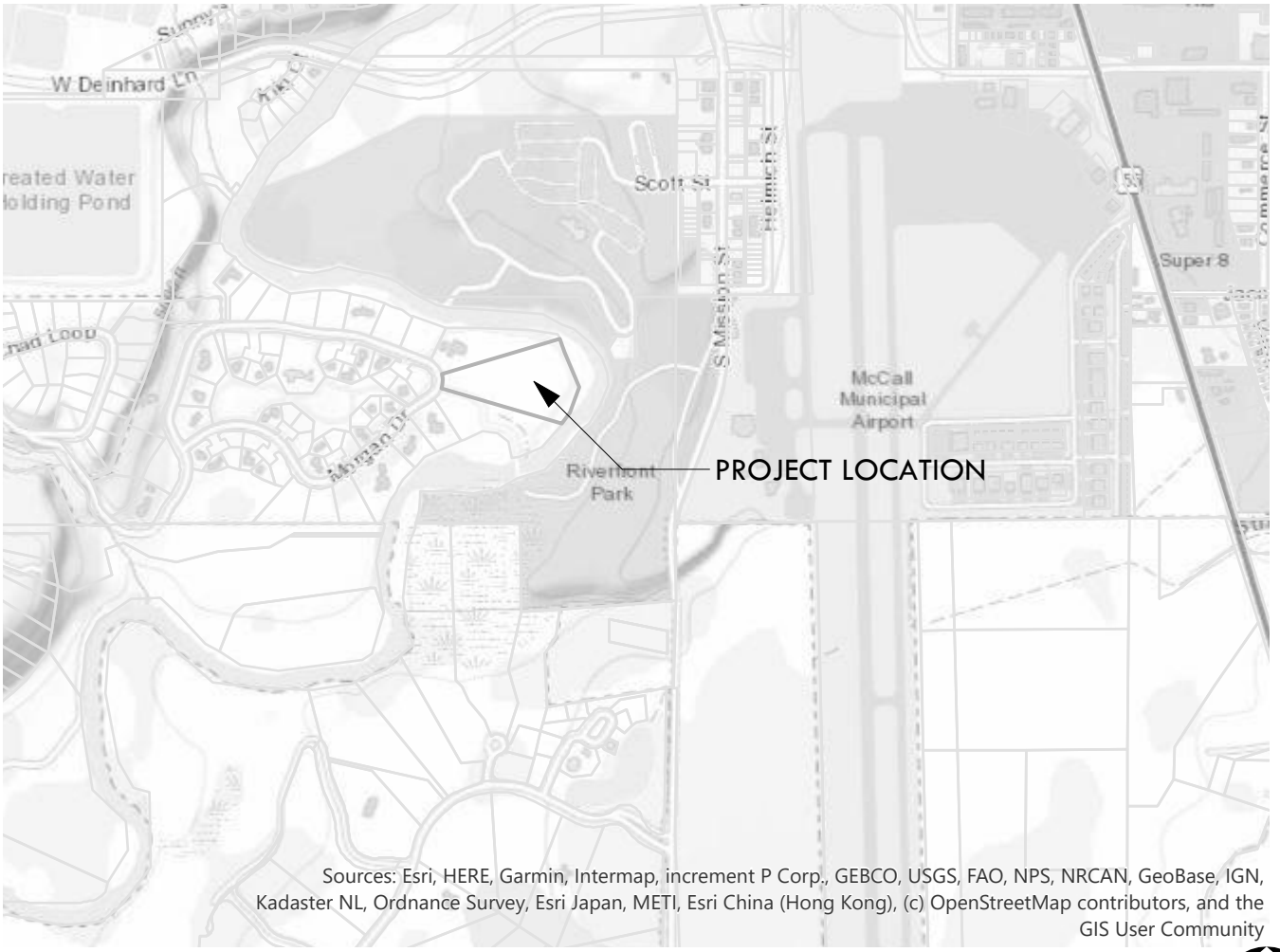
U.S. Army Corps of Engineers
Walla Walla District
Boise Regulatory Office
720 East Park Blvd., Suite 245
Boise, Idaho 83712-7757

Please note that your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with all terms and conditions of this permit, the permit is subject to suspension, modification, or revocation and you are subject to an enforcement action by this office.

I hereby certify that the work authorized by the above-referenced permit has been completed in accordance with the terms and conditions of the said permit. The required mitigation was also completed in accordance with the permit conditions.

_____ _____

Signature of PERMITEE *DATE*



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

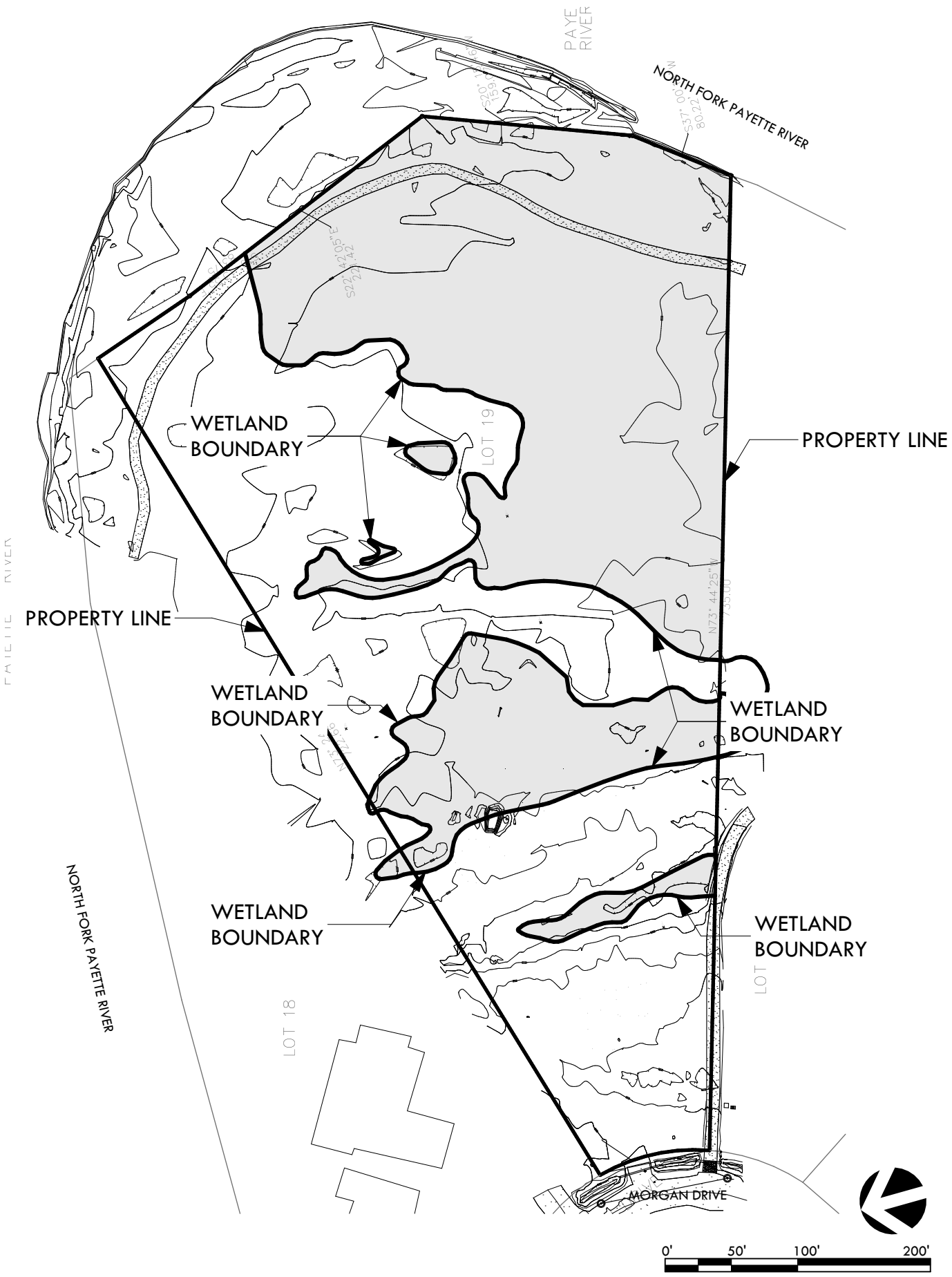
NOT TO SCALE

JAMES FRONK CONSULTING, LLC.
14028 NORWOOD RD
PO BOX 576
McCALL, ID 83638
(208) 634-8093

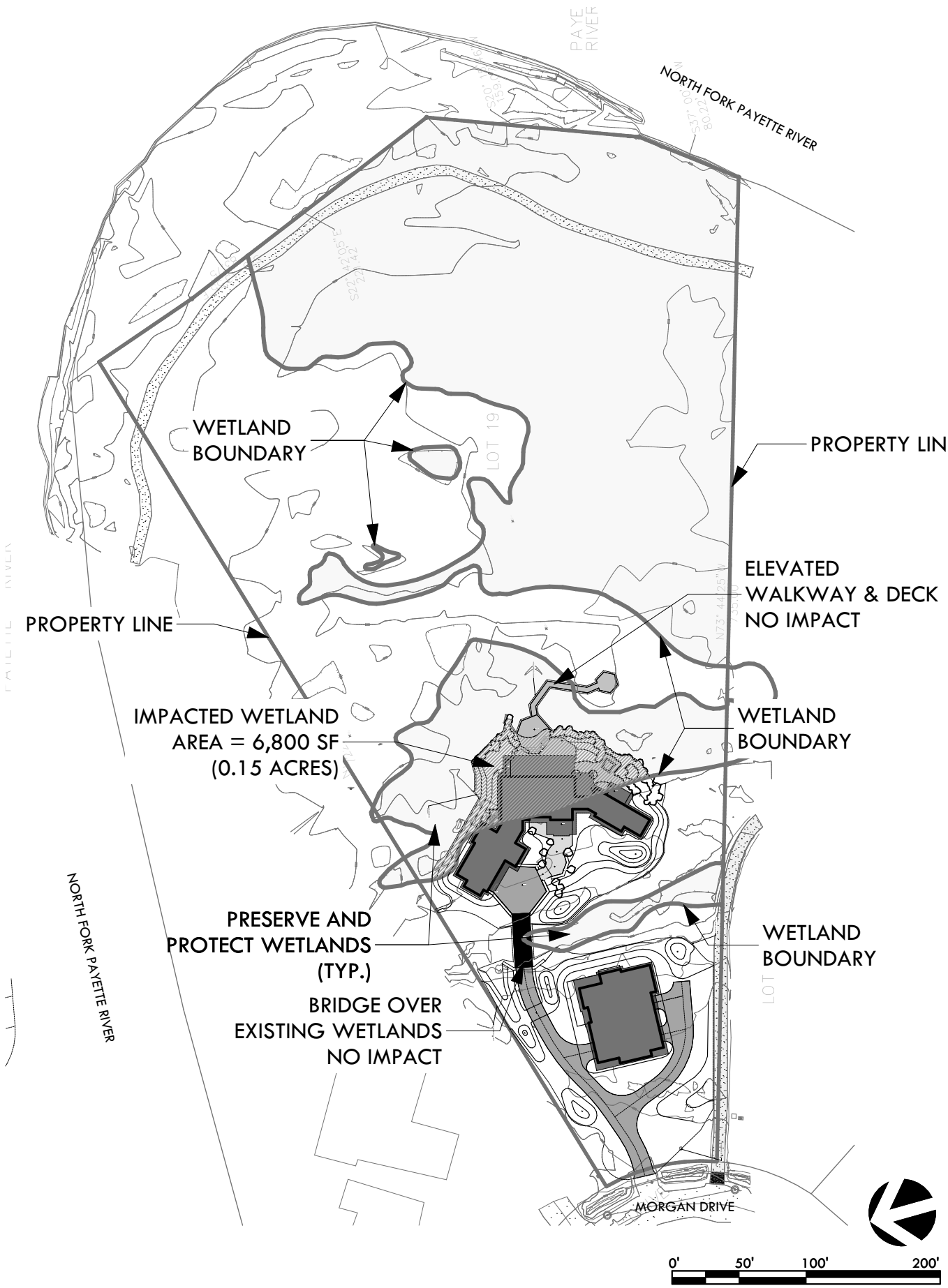
VICINITY MAP

SANDERS RESIDENCE
221 MORGAN DRIVE MCCALL ID 83638
RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2

FIGURE:	1
DRAWN BY:	ES
DATE:	8/24/2020



JAMES FRONK CONSULTING, LLC. 14028 NORWOOD RD PO BOX 576 McCALL, ID 83638 (208) 634-8093	SITE MAP SANDERS RESIDENCE 221 MORGAN DRIVE MCCALL ID 83638 RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2	FIGURE: 2 DRAWN BY: ES DATE: 8/24/2020



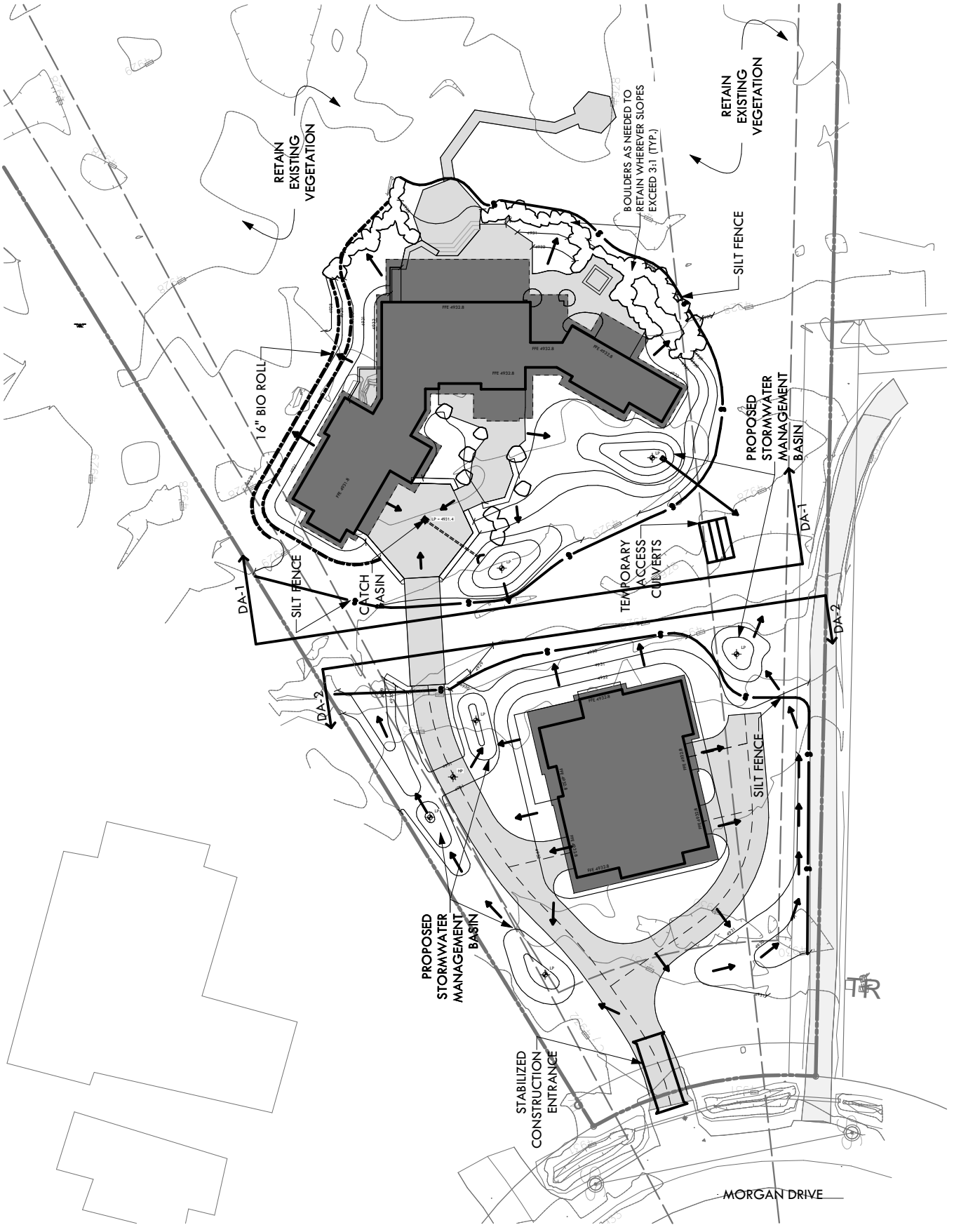
BIMcloud: s132-148-167-156 - BIMcloud Basic for ARCHICAD 23/SANDERS RIVER CROSSING

JAMES FRONK CONSULTING, LLC.
14028 NORWOOD RD
PO BOX 576
McCALL, ID 83638
(208) 634-8093

WETLAND IMPACT WITH BUILDING

SANDERS RESIDENCE
221 MORGAN DRIVE MCCALL ID 83638
RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2

FIGURE:	4
DRAWN BY:	ES
DATE:	8/24/2020



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14028 NORWOOD RD
PO BOX 576
McCALL, ID 83638
(208) 634-8093

EROSION CONTROL

SANDERS RESIDENCE
221 MORGAN DRIVE MCCALL ID 83638
RIVER'S CROSSING SUBDIVISION, LOT 19, BLOCK 2

FIGURE:	7
DRAWN BY:	ES
DATE:	8/24/2020

NATIONWIDE PERMIT 29

Residential Developments:

Discharges of dredged or fill material into non-tidal waters of the United States for the construction or expansion of a single residence, a multiple unit residential development, or a residential subdivision. This NWP authorizes the construction of building foundations and building pads and attendant features that are necessary for the use of the residence or residential development. Attendant features may include but are not limited to roads, parking lots, garages, yards, utility lines, storm water management facilities, septic fields, and recreation facilities such as playgrounds, playing fields, and golf courses (provided the golf course is an integral part of the residential development).

The discharge must not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters.

Subdivisions: For residential subdivisions, the aggregate total loss of waters of United States authorized by this NWP cannot exceed 1/2-acre. This includes any loss of waters of the United States associated with development of individual subdivision lots.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity. (See general condition 32.) (Authorities: Sections 10 and 404)

WATER QUALITY CERTIFICATION, NWP 29:

Agency responsible for administration of water quality, based on project location is listed below. If DENIED, then an Individual Water Quality Certification or Waiver of Certification is required, prior to the commencement of any work activities and/or issuance of a DA verification, authorization and/or permit.

State of Idaho: **PARTIALLY DENIED**;
Activities Denied Certification:
- activities resulting in loss in excess of 300 linear feet of streambed
- activities resulting in a loss in excess of ½ acre of jurisdictional wetlands

Coeur d'Alene Tribal Lands: **DENIED**

Shoshone-Bannock Tribal Lands: **DENIED**

U.S. Environmental Protection Agency for all other Tribal Lands: **DENIED**

2021 Nationwide Permits
Regional Conditions
Walla Walla District Regulatory Division (State of Idaho)

March 15, 2021

The following Nationwide Permit (NWP) regional conditions are required in the state of Idaho and apply to all 2021 NWPs[1]. Regional conditions are established by individual Corps Districts to ensure projects result in no more than minimal adverse impacts to the aquatic environment and to address local resources concerns. This document also includes regional additions to the NWP General Conditions, notification procedures pertaining to certain NWP's, and regional additions to the definitions.

REGIONAL CONDITIONS

A. Watersheds Requiring Pre-Construction Notification, Specific to Anadromous Fish

This Regional Condition applies to all 2021 NWPs.

- Pre-construction notification (PCN) will be required for the above listed nationwide permits in the geographic area as shown on Figure 1: *Watersheds Requiring Pre-Construction Notification*, dated January 6, 2021.

B. Vegetation Preservation and Replanting

- To avoid impacts to aquatic habitat and to reduce sedimentation and erosion, permittee shall avoid and minimize the removal of vegetation in waters of the U.S. to the maximum extent practicable. Areas subject to temporary vegetation removal in waters of the U.S. during construction shall be replanted with appropriate native[2] species by the end of the first growing season, unless conditioned otherwise. Permittee shall avoid introducing or spreading noxious or invasive plants[3].

- Replanted vegetation that does not survive the first growing season shall be replanted before the end of the next growing season. Re-plantings shall continue to occur until desired vegetation densities are achieved. Re-vegetation densities should be based on reference conditions.

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[1] For the list of 2017 Nationwide Permits please see: https://www.nww.usace.army.mil/Business-With-Us/Regulatory-Division/Nationwide-Permits/

[2] Idaho Department of Transportation, Native Plants for Idaho Roadside Restoration and Revegetation Programs: https://itd.idaho.gov/wp-content/uploads/2016/06/RP171Roadside_Revegetation.pdf

[3] U.S. Department of Agriculture, Natural Resource Conservation Service Plant Database of introduced, invasive, and noxious plants for Idaho: https://plants.usda.gov/java/noxious?rptType=State&statefips=16.

C. De-watering & Re-watering (as applicable)

- Cofferdams shall be constructed of non-erosive material such as concrete jersey barriers, bulk bags, water bladders, sheet pile, and other similar non-erosive devices. Cofferdams may not be constructed by using mechanized equipment to push streambed material through flowing water.

- Diversion channels constructed to bypass flow around the construction site shall be lined with plastic, large rock, pipe or otherwise protected from erosion prior to releasing flows into or through the diversion channel.

- Water removed from within the coffered area shall be pumped to a sediment basin or otherwise treated to remove suspended sediments prior to its return to the waterway.

- To prevent unwanted passage of state or federally-protected fish, if present, from the coffered area, Water pipe intakes shall be screened with openings measuring < 3/32 inch to prevent entrainment of fish trapped in the coffered area.

- Should fish be present within the coffered areas contact your local Idaho Department of Fish and Game (IDFG) office prior to performing fish removal or salvage. Fish shall be collected by electrofishing, seining or dip net, or otherwise removed and returned to the waterway upstream of the project area. If electrofishing is used, the National Marine Fisheries Service (NMFS) guidelines for electrofishing should be followed[4], unless conditioned otherwise.

- Stream channels that have been dewatered during project construction shall be re-watered slowly to avoid lateral and vertical erosion of the de-watered channel, prevent damage to recently reclaimed work areas and/or damage to permitted work.

- Temporary stockpiles in waters of the United States shall be removed in their entirety so as not to form a berm or levee parallel to the stream that could confine flows or restrict overbank flow to the floodplain.

D. In-Water Structures and Complexes

- PCN notification in accordance with General Condition 32 is required for all non-federal applicants with activities involving gabion baskets placed below the ordinary high water mark.
- Stream meanders, riffle and pool complexes, pool stream structures, rock/log barbs, rock J-hooks, drop structures, sills, engineered log jams or similar structures/features when used shall be site specifically designed by an appropriate professional with experience in hydrology or fluvial geomorphology.

[4] Guidelines for Electrofishing Waters Containing Salmonids Listed Under the Endangered Species Act (June 2000) https://archive.fisheries.noaa.gov/wcr/publications/reference_documents/esa_refs/section4d/electro2000.pdf

E. Temporary Sidecasting

- Materials from exploratory trenching and installation of utility lines may be temporarily side cast into a de-watered coffered area for up to 30 days but not within flowing waters. Material from exploratory trenching and installation of utility lines in wetlands may be temporarily side cast for up to 30 days.

F. Suitability of Sediments for Open Water Disposal and us as Fill

- Sampling for determination of suitability of sediments for open water disposal or for use as fill, must comply with the Sediment Evaluation Framework for the Pacific Northwest (SEF)[5].

G. Avoidance and Minimization

- In addition to information required under General Condition 32(b), the applicant shall include information about previous discharges of fill material into waters of the United States within the project area. This is only for non-federal applicants where a PCN is required.

- Discharges of dredged or fill material into waters of the U.S., including wetlands, to meet set back requirements are not authorized under NWP.

H. Erosion Control

- Erosion control blanket or fabric used in or adjacent to waters of the U.S. shall be comprised of biodegradable material, to ensure decomposition and reduced risk to fish, wildlife and public safety, unless conditioned otherwise. If the applicant proposes to use materials other than as indicated above they must demonstrate how the use of such materials will not cause harm to fish, wildlife and public safety.

I. Reporting Requirement for Federal Permittees

- Federal Agencies with projects that require compensatory mitigation for loss of waters of the U.S. and who propose to purchase credits from an approved wetland and/or stream mitigation bank must provide proof of purchase within 30 days of when the credits were purchased. Purchase of credits from an approved mitigation bank must be IAW the Mitigation Banking Instrument of Record.

[5] Northwest Regional Sediment Evaluation Team (RSET) 2016. Sediment Evaluation Framework for the Pacific Northwest. Prepared by the RSET Agencies, July 2016, 160 pp plus appendices. http://nwd.usace.army.mil/Missions/Civil-Works/Navigation/RSET/SEF

REGIONAL ADDITIONS TO THE GENERAL CONDITIONS

General Condition 4. Migratory Bird Breeding Areas. Regional Addition: For additional information please contact the US Fish and Wildlife Service at the following field office locations: State Office (Boise) at (208) 387-5243; Northern Idaho Field Office (Spokane) at (509) 891-6839; or the Eastern Idaho Field Office (Chubbuck) at (208) 237-6975. https://www.fws.gov/idaho/promo.cfm?id= 177175802

General Condition 6. Suitable Material. Regional Addition: Erosion control blanket or fabric used in or adjacent to waters of the U.S. shall be comprised of biodegradable material, to ensure decomposition and reduced risk to fish, wildlife and public safety, unless conditioned otherwise. If the applicant proposes to use materials other than as indicated above they must demonstrate how the use of such materials will not cause harm to fish, wildlife and public safety.

General Condition 9. Management of Water Flows. Regional Addition: To obtain information on State of Idaho definition of high water refer to Idaho Department of Water Resources (IDAPA 37.03.07. Rule 62.03.04.a). For culverts or bridges located in a community qualifying for the national flood insurance program, the minimum size culvert shall accommodate the 100-year flood design flow frequency (IDAPA 37.03.07. Rule 62.03.04.c).

General Condition 12. Soil Erosion and Sediment Controls. Regional Addition: For additional information refer to the Idaho Department of Environmental Quality Catalog of Stormwater Best Management Practices for Idaho Cities and Counties, available online at: https://www.deq.idaho.gov/public-information/laws-guidance-and-orders/guidance/.

General Condition 18. Endangered Species. Regional Addition: For additional information on ESA listed species in north Idaho please contact the US Fish and Wildlife Service (USFWS) Northern Idaho Field Office (Spokane) at (509) 893-8009, for all other counties in Idaho contact the USFWS State Office (Boise) at (208) 378-5388.

General Condition 20. Historic Properties. Regional Addition: Property is generally considered “historic” if it is at least 50 years old, and is not limited to buildings. For additional information on the potential for cultural resources in proximity to the project site, contact the Idaho State Historic Preservation Office at (208) 334-3847 located in Boise, Idaho.

NOTIFICATION PROCEDURES BY THE CORPS FOR CERTAIN NATIONWIDE PERMITS

Waivers: For nationwide permits with a waiver provision, District coordination with Idaho Department of Environmental Quality (IDEQ) and Environmental Protection Agency (tribal lands) will be conducted prior to the District Engineer making a waiver determination to ensure the proposed activity is in compliance with Section 401 Water Quality Standards.

Select Waters and Wetlands: The Corps will coordinate with the Idaho Department of Fish and Game (IDFG) for activities in the following waters and wetlands that require notification and are authorized by NWP:

- Waters: Anadromous waters as shown on Figure 1: *Watersheds Requiring Pre-Construction Notification*, dated January 6, 2021; Henry's Fork of the Snake River and its tributaries; South Fork Snake River and its tributaries; Big Lost River and its tributaries upstream of the US 93 crossing; Beaver, Camas, and Medicine Lodge Creeks; Snake River; Blackfoot River above Blackfoot Reservoir; Portneuf River; Bear River; Boise River including South Fork, North Fork and Middle Fork; Payette River including South Fork, North Fork and Middle Fork; Coeur d'Alene River, including the North Fork; St. Joe River; Priest River; Kootenai River; Big Wood River; and Silver Creek and its tributaries.

- Wetlands identified in Idaho Department of Fish and Game, Wetland Conservation Strategy as Class I, Class II and Reference Habitat Sites[6].

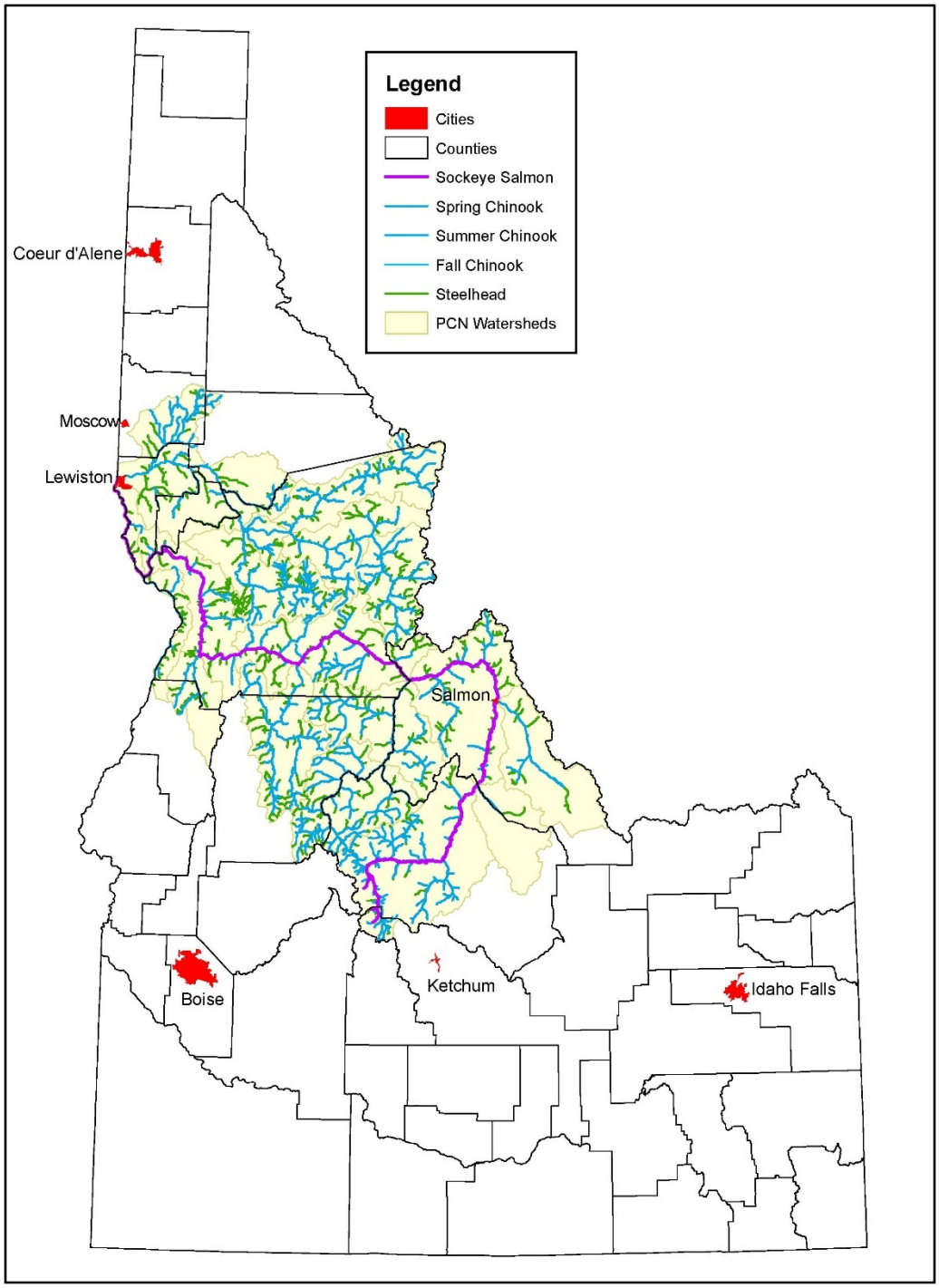
- Wetlands identified in the Idaho Wetland Conservation Prioritization Plan-2012[7].

[6] Idaho Department of Fish and Game (IDFG) Wetland Conservation Strategies have been developed for the Henrys Fork Basin, Northern Idaho, Big Wood River, Southeast Idaho, East-Central Idaho and Spokane River Basin, Middle and Western Snake River and tributaries, and the Upper Snake River–Portneuf Drainage, Weiser River Basin, and West Central Mountain Valleys and adjacent wetlands. Closed basins of Beaver-Camas Creeks, Medicine Lodge Creek, Palouse River and lower Clearwater River sub-basins, Middle Fork and South Fork Clearwater Basins and Camas Prairie in northern Idaho. Refer to the internet site at: http://fishandgame.idaho.gov/content/page/wetlands-publications-idaho-natural-heritage-program#reports

[7] Murphy, C., J. Miller and A. Schmidt. 2012. https://idfg.idaho.gov/species/bibliography/project/wetlands

Figure 1

Watersheds Requiring Pre-Construction Notification



0 20 40 80
Miles

US Army Corps of Engineers

6 January 2021

2021 Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation

(a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements

No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas

Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas

Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds

No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material

No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes

No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments

If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows
To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains
The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment
Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls
Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Structures and Fills
Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance
Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project
The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers
(a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency

with direct management responsibility for that river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: http://www.rivers.gov/.

17. Tribal Rights

No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species

(a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of "effects of the action" for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding "activities that are reasonably certain to occur" and "consequences caused by the proposed action."

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be

affected by the proposed activity. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-Federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have "no effect" on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at

http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.nmfs.noaa.gov/pr/species/esa/ respectively.

19. Migratory Birds and Bald and Golden Eagles

The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties

(a) No activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)).

Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect.

(d) Where the non-Federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and has so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts

Permittees that discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by an NWP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters

Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment,

additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57 and 58 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after she or he determines that the impacts to the critical resource waters will be no more than minimal.

23. <u>Mitigation</u>

The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3/100-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3/100-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of

streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14)

must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee-responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on land in which another federal agency holds an easement, the district engineer will coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement.

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. <u>Safety of Impoundment Structures</u>

To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state or federal, dam safety criteria or have

been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality

(a) Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401, a CWA section 401 water quality certification for the proposed discharge must be obtained or waived (see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed discharge in order for the activity to be authorized by an NWP.

(b) If the NWP activity requires pre-construction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed discharge is not authorized by an NWP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge, the permittee must submit a copy of the certification to the district engineer. The discharge is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied by the issuance of a water quality certification or a waiver.

(c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management.

In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions

The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits

The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions:

(a) If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States cannot exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated

bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1⁄3-acre.

(b) If one or more of the NWPs used to authorize the single and complete project has specified acreage limits, the acreage loss of waters of the United States authorized by those NWPs cannot exceed their respective specified acreage limits. For example, if a commercial development is constructed under NWP 39, and the single and complete project includes the filling of an upland ditch authorized by NWP 46, the maximum acreage loss of waters of the United States for the commercial development under NWP 39 cannot exceed 1/2-acre, and the total acreage loss of waters of United States due to the NWP 39 and 46 activities cannot exceed 1 acre.

29. Transfer of Nationwide Permit Verifications

If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____

_____

(Transferee)

_____

_____

(Date)

30. Compliance Certification

Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory

mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States

If an NWP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a "USACE project"), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification

(a) *Timing*. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) *Contents of Pre-Construction Notification*: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures.

(ii) For linear projects where one or more single and complete crossings require pre-construction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not change those non-PCN NWP activities into NWP PCNs.

(iii) Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial and intermittent streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining

why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatenedspecies (or species proposed for listing) that might be affected by the proposed activity or utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the "study river" (see general condition 16); and

(10) For an NWP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project.

(c) *Form of Pre-Construction Notification*: The nationwide permit pre-construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

(d) *Agency Coordination*: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity's adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iii)

NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 N Hilton Street, Boise, ID 83706
(208) 373-0502

Brad Little, Governor
Jess Byrne, Director

December 4, 2020

Kelly J. Urbanek, Chief
U.S. ACOE Regulatory Division
Walla Walla District
720 East Park Boulevard, Suite 245
Boise, Idaho 83712-7757

Subject: Final §401 Water Quality Certification for 2020 Nationwide Permits in Idaho

Dear Ms. Urbanek:

Enclosed please find the Idaho Department of Environmental Quality (DEQ) final water quality certification for the 2020 Nationwide Permits in Idaho. DEQ offered a 21-day public comment period, beginning on November 2, 2020, and ending on November 23, 2020.

DEQ received a single comment letter. After review of the comments received, minor modifications were made to the final certification in order to provide additional clarity.

If you have any questions or concerns regarding this certification, please contact Jason Pappani at (208) 373-0515 or via email at jason.pappani@deq.idaho.gov.

Sincerely,

Mary Anne Nelson, PhD
Surface and Wastewater Division Administrator

MAN:JP:lf

cc: Jason Pappani, DEQ State Office
DEQ Regional Administrators
James Joyner, ACOE Walla Walla District
Brent King, Idaho Attorney General's Office

Idaho Department of Environmental Quality

Final §401 Water Quality Certification

December 4, 2020

2020 U.S. Army Corps of Engineers §404 Nationwide Permits (NWPs)

Pursuant to the provisions of Section 401(a)(1) of the Federal Water Pollution Control Act (Clean Water Act), as amended; 33 U.S.C. Section 1341(a)(1); and Idaho Code §§ 39-101 et seq. and 39-3601 et seq., the Idaho Department of Environmental Quality (DEQ) has authority to review activities receiving Section 404 dredge and fill permits and issue water quality certification decisions.

Based upon its review of the proposed 2020 Nationwide Permits published in the Federal Register on September 15, 2020, DEQ certifies that if the permittee complies with the terms and conditions imposed by the permits, including the Regional Conditions set forth by the Army Corps of Engineers (ACOE), along with the conditions set forth in this water quality certification, then activities will comply with the applicable water quality requirements of Sections 301, 302, 303, 306, and 307 of the Clean Water Act, the Idaho Water Quality Standards (WQS) (IDAPA 58.01.02), and other appropriate water quality requirements of state law.

This certification does not constitute authorization of the permitted activities by any other state or federal agency or private person or entity. This certification does not excuse the permit holder from the obligation to obtain any other necessary approvals, authorizations, or permits, including without limitation, the approval from the owner of a private water conveyance system, if one is required, to use the system in connection with the permitted activities.

1 Antidegradation Review

The WQS contain an antidegradation policy providing three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051).

- Tier I Protection. The first level of protection applies to all water bodies subject to Clean Water Act jurisdiction and ensures that existing uses of a water body and the level of water quality necessary to protect those existing uses will be maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). Additionally, a Tier I review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.07).
- Tier II Protection. The second level of protection applies to those water bodies considered high quality and ensures that no lowering of water quality will be allowed unless deemed necessary to accommodate important economic or social development (IDAPA 58.01.02.051.02; 58.01.02.052.08).

- Tier III Protection. The third level of protection applies to water bodies that have been designated outstanding resource waters and requires that activities not cause a lowering of water quality (IDAPA 58.01.02.051.03; 58.01.02.052.09).

DEQ is employing a water body by water body approach to implementing Idaho's antidegradation policy. This approach means that any water body fully supporting its beneficial uses will be considered high quality (IDAPA 58.01.02.052.05.a). Any water body not fully supporting its beneficial uses will be provided Tier I protection for that use, unless specific circumstances warranting Tier II protection are met (IDAPA 58.01.02.052.05.c). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (IDAPA 58.01.02.052.05).

1.1 Pollutants of Concern

The primary pollutant of concern, for projects permitted under the 2020 NWPs administered by the ACOE, is sediment. In locations where heavy metals are present due to mining activities, or where high concentrations of nutrients may be associated with sediments, additional considerations may be necessary. If the project reduces riparian vegetation, then temperature (thermal loading) may also be of concern.

The procedures outlined in the Sediment Evaluation Framework for the Pacific Northwest[1] may be applied to assess and characterize sediment to determine the suitability of dredged material for unconfined aquatic placement, to determine the suitability of post dredge surfaces, and to predict effects on water quality during dredging (See Section 2.4 for more details).

As part of the Section 401 water quality certification, DEQ is requiring the applicant to comply with various conditions to protect water quality and to meet Idaho WQS, including the criteria applicable to sediment.

1.2 Receiving Water Body Level of Protection

The ACOE NWPs authorize construction activities in waters of the United States. In Idaho, jurisdictional waters of the state can potentially receive discharges either directly or indirectly from activities authorized under the NWPs. DEQ applies a water body by water body approach to determine the level of antidegradation protection a water body will receive. (IDAPA 58.01.02.052.05).

All waters in Idaho that receive discharges from activities authorized under a NWP will receive, at minimum, Tier I antidegradation protection because Idaho's Tier I antidegradation policy applies to all state waters (IDAPA 58.01.02.052.01). Water bodies that fully support their aquatic life or recreational uses are considered *high quality waters* and will receive Tier II antidegradation protection (IDAPA 58.01.02.051.02). Because of the statewide applicability, the antidegradation review will assess whether the NWP permit complies with both Tier I and Tier II antidegradation provisions (IDAPA 58.01.02.052.03).

Although Idaho does not currently have any Tier III designated outstanding resource waters (ORWs), it is possible for a water body to be designated as an ORW during the life of the NWPs.

[1] Northwest Regional Sediment Evaluation Team (RSET). 2018. Sediment Evaluation Framework for the Pacific Northwest. *Prepared by* the RSET Agencies, May 2018, 183 pp plus appendices.

Because of this potential, the antidegradation review also assesses whether the permit complies with the outstanding resource water requirements of Idaho's antidegradation policy (IDAPA 58.01.02.051.03).

To determine the support status of the receiving water body, the most recent EPA-approved Integrated Report, available on Idaho DEQ's website, is to be used: http://www.deq.idaho.gov/water-quality/surface-water/monitoring-assessment/integrated-report/. (IDAPA 58.01.02.052.05).

High quality waters are identified in Categories 1 and 2 of the Integrated Report. If a water body is in either Category 1 or 2, it is a Tier II water body.

Unassessed waters are identified in Category 3 of DEQ's Integrated Report. These waters require a case by case determination to be made by DEQ based on available information at the time of the application for permit coverage (IDAPA 58.01.02.052.05.b). For activities occurring on unassessed waters under this certification, DEQ has determined that complying with the conditions of the NWP, the regional conditions, and this certification will ensure the provisions of IDAPA 58.01.02.052 are met.

Impaired waters are identified in Categories 4 and 5 of the Integrated Report. Category 4(a) contains impaired waters for which a TMDL has been approved by EPA. Category 4(b) contains impaired waters for which controls other than a TMDL have been approved by EPA. Category 5 contains waters which have been identified as "impaired", for which a TMDL is needed. These waters are Tier I waters, for the use which is impaired. With the exception, if the aquatic life uses are impaired for any of these three pollutants—dissolved oxygen, pH, or temperature—and the biological or aquatic habitat parameters show a healthy, balanced biological community, then the water body shall receive Tier II protection, in addition to Tier I protection, for aquatic life uses (IDAPA 58.01.02.052.05.c.i).

DEQ's webpage also has a link to the state's map-based Integrated Report which presents information from the Integrated Report in a searchable, map-based format: http://www.deq.idaho.gov/assistance-resources/maps-data/.
Water bodies can be in multiple categories for different causes. If assistance is needed in using these tools, or if additional information/clarification regarding the support status of the receiving water body is desired, please feel free to contact your nearest DEQ regional office or the State Office (Table 1).

Table 1. Idaho DEQ Regional and State Office Contacts

Regional Office	*Address*	*Phone Number*	*Email*
Boise	1445 N. Orchard Rd., Boise 83706	208-373-0550	kati.carberry@deq.idaho.gov
Coeur d'Alene	2110 Ironwood Parkway, Coeur d'Alene 83814	208-769-1422	chantilly.higbee@deq.idaho.gov
Idaho Falls	900 N. Skyline, Suite B., Idaho Falls 83402	208-528-2650	troy.saffle@deq.idaho.gov
Lewiston	1118 "F" St., Lewiston 83501	208-799-4370	sujata.connell@deq.idaho.gov
Pocatello	444 Hospital Way, #300 Pocatello 83201	208-236-6160	matthew.schenk@deq.idaho.gov
Twin Falls	650 Addison Ave. W., Suite 110, Twin Falls 83301	208-736-2190	balthasar.buhidar@deq.idaho.gov
State Office	1410 N. Hilton Rd., Boise 83706	208-373-0502	jason.pappani@deq.idaho.gov

1.3 Protection and Maintenance of Existing Uses (Tier I Protection)

A Tier I review is performed for all new or reissued permits or licenses, applies to all waters subject to the jurisdiction of the Clean Water Act, and requires demonstration that existing uses and the level of water quality necessary to protect existing uses shall be maintained and protected (IDAPA 58.01.02.051.01; 052.01 and 04). The numeric and narrative criteria in the WQS are set at levels that ensure protection of existing and designated beneficial uses.

Water bodies not supporting existing or designated beneficial uses must be identified as water quality limited, and a total maximum daily load (TMDL) must be prepared for those pollutants causing impairment (IDAPA 58.01.02.055.02). Once a TMDL is completed, discharges of causative pollutants shall be consistent with the allocations in the TMDL (IDAPA 58.01.02.055.05). Prior to the completion of a TMDL, the WQS require the application of the antidegradation policy and implementation provisions to maintain and protect beneficial uses (IDAPA 58.01.02.055.04).

The general (non-numeric) effluent limitations in the NWPs and associated Regional Conditions for the ACOE Walla Walla District address best management practices (BMPs) aimed at minimizing impacts to the aquatic environment, especially sediment and turbidity impacts including: vegetation protection and restoration, de-watering requirements, erosion and sediment controls, soil stabilization requirements, pollution prevention measures, prohibited discharges, and wildlife considerations. Although the NWPs do not contain specific (numeric) effluent limitations for sediment or turbidity, the conditions identified in the permits and in this water quality certification will ensure compliance with DEQ's water quality standards, including the narrative sediment criteria (IDAPA 58.01.02.200.08) and DEQ's turbidity criteria (IDAPA 58.01.02.250.02.e).

In order to ensure compliance with Idaho WQS, DEQ has included a condition requiring the permittee(s) to comply with Idaho's numeric turbidity criteria, developed to protect aquatic life

uses. The criterion states, "Turbidity shall not exceed background turbidity by more than 50 nephelometric turbidity units (NTU)[2] instantaneously or more than 25 NTU for more than 10 consecutive days" (IDAPA 58.01.02.250.02.e). DEQ is requiring turbidity monitoring when project activities result in a discharge to waters of the United States that causes a visible sediment plume (IDAPA 58.01.02.054.01) (See Section 2.5 for more details).

If an approved TMDL exists for a receiving water body that requires a load reduction for a pollutant of concern, then the project must be consistent with the provisions of that TMDL (IDAPA 58.01.02.055.05).
For authorized activities requiring a pre-construction notification (PCN), the Corps will have the opportunity to evaluate the NWP activities on a case by case basis to ensure that the activity will not cause more than a minimal adverse environmental effect, individually and cumulatively. The Corps has agreed to forward the verification letters to the appropriate DEQ regional office (Table 1) for all authorized activities including the NWP activities that require a PCN. This will better inform DEQ of the authorized activities that are occurring throughout the state and determine if additional conditions will need to be implemented when the ACOE reissues the NWPs.

1.3.1 DEQ's Determination

DEQ concludes that, given the nature of the activities authorized by the 2020 NWPs, such activities will comply with Idaho's Tier I requirements under IDAPA 58.01.02.051.01 and 58.01.02.052.07, provided the permitted activities are carried out in compliance with the limitations and associated requirements of the 2020 NWPs, Regional Conditions, and conditions set forth in this water quality certification.

1.4 Protection of High-Quality Waters (Tier II Protection)

Water bodies that fully support their beneficial uses are recognized as high-quality waters and will be provided Tier II protection in addition to Tier I protection (IDAPA 58.01.02.051.02; 58.01.02.052.05.a). Water quality parameters applicable to existing or designated beneficial uses must be maintained and protected under Tier II, unless a lowering of water quality is deemed necessary to accommodate important economic or social development (IDAPA 58.01.02.051.02; 58.01.02.052.08).

The ACOE does not authorize projects with more than minimal individual and cumulative impacts on the aquatic environment under a NWP (33 U.S.C.A. § 1344(e)). As required by the National Environmental Policy Act (NEPA) the Corps has analyzed the individual and cumulative effects for the NWP activities. DEQ recognizes that short term changes in water quality may occur with respect to sediment as a result of the authorized activities, but has determined that adherence to the terms and conditions imposed by the permits, including the Regional Conditions set forth by the Army Corps of Engineers (ACOE or Corps), along with the conditions set forth in this water quality certification will ensure that there are no long-term adverse changes to water quality or beneficial use support as a result of any activity authorized under this certification (IDAPA 58.01.02.052.03). As a general principle, DEQ believes degradation of water quality should be viewed in terms of permanent or long-term adverse

[2] *NTU is a unit of measure of the concentration of suspended particles in the water (turbidity). It is determined by shining a light through a sample and measuring the incident light scattered at right angles from the sample.*

changes. Short-term or temporary reductions in water quality, if reasonable measures are taken to minimize them (such as the certification conditions in Section 2), may occur without triggering a Tier II analysis (IDAPA 58.01.02.052.03; 080.02).

To ensure proposed regulated activities will not cause more than minimal individual and cumulative impacts on the aquatic environment, certain NWPs require project proponents to notify district engineers (in the form of a PCN) of their proposed activities prior to conducting regulated activities. This level of review gives the district engineer the opportunity to evaluate activities on a case by case basis to determine whether additional conditions or mitigation requirements are warranted to ensure that the proposed activity results in no more than the minimal individual and cumulative impacts on the aquatic environment.

DEQ has denied certification for NWP 16, NWP 23, and NWP 53 (see Section 3.1); and for certain activities associated with NWP 3, NWP 12, NWP 13, NWP 14, NWP 21, NWP 29, NWP 39, NWP 40, NWP 42, NWP 43, NWP 44, NWP 50, NWP 51, NWP 52, NWP C, NWP D, and NWP E (see Section 3.2). Projects seeking coverage under these NWPs will need to request individual certification from DEQ. DEQ will consider any additional conditions or denial of certification if necessary to ensure no lowering of water quality occurs for any of these projects proposed on Tier II water.

Additionally, if an authorized project causes a visible sediment plume then turbidity monitoring is required (see Section 2.5 for more details).

1.4.1 DEQ's Determination

DEQ concludes that the activities authorized by the 2020 NWPs and this certification will comply with Idaho's Tier II requirements under IDAPA 58.01.02.051.02 and 58.01.02.052.08 providing permitted activities are carried out in compliance with the limitations and associated requirements of the 2020 NWPs, Regional Conditions, and conditions of this water quality certification.

1.5 Protection of Outstanding Resource Waters (Tier III Protection)

Idaho's antidegradation policy requires that the quality of outstanding resource waters (ORWs) be maintained and protected from the impacts of point and nonpoint source activities (IDAPA 58.01.02.051.03). No water bodies in Idaho have been designated as ORWs to date. Because it is possible waters may become designated during the term of the 2020 NWPs, DEQ has evaluated whether the NWPs comply with the ORW antidegradation provision.

DEQ has denied certification for any activities on any Outstanding Resource Water (ORW) (see Section 3) and is requiring that any activities proposed on an ORW apply for individual certification (see Section 2.3).

1.5.1 DEQ's Determination

DEQ concludes that the activities authorized by the 2020 NWPs and this certification will comply with Idaho's Tier III requirements under IDAPA 58.01.02.051.03 providing permitted activities are carried out in compliance with the limitations and associated requirements of the 2020 NWPs, Regional Conditions, and conditions of this water quality certification.

2 Conditions Necessary to Ensure Compliance with Water Quality Standards or Other Appropriate Water Quality Requirements of State Law

For all activities covered under this certification, the following conditions are necessary to ensure that permitted projects comply with water quality requirements.

2.1 Design, Implementation, and Maintenance of Appropriate Best Management Practices

Best Management Practices (BMPs) must be designed, implemented, and maintained by the permittee to fully protect and maintain the beneficial uses and ambient water quality of waters of the state and to prevent exceedances of WQS (IDAPA 58.01.02.350.01.a).

BMPs must be selected and properly installed. Proper installation and operation of BMPs are required to ensure the provisions of IDAPA 58.01.02.052 are met. In order to ensure that BMPs are operating properly and to demonstrate that degradation has not occurred, the permittee must monitor and evaluate BMP effectiveness daily during project activities to assure that water quality standards are being met.

Approved BMPs for specific activities (mining, forestry, stream channel alteration, etc.) are codified in IDAPA 58.01.02.350. Additionally, DEQ provides a catalog of storm water best management practices, available at: http://www.deq.idaho.gov/media/60184297/stormwater-bmp-catalog.pdf. This catalog presents a variety of BMPs that can be used to control erosion and sediment during and after construction. Other sources of information are also available and may be used for selecting project appropriate BMPs.

This condition is necessary meet the following water quality requirements:

Control of erosion, sediment, and turbidity to maintain beneficial use support and compliance with the following water quality standards:

- General Surface Water Criteria for Sediment (IDAPA 58.01.02.200.08)
- Numeric Turbidity Criteria for Aquatic Life (IDAPA 58.01.02.250.02.e)
- Numeric turbidity criteria for protection of domestic water supply (IDAPA 58.01.02.252.01.b)
- Point source wastewater treatment requirements (IDAPA 58.01.02.401.02)

2.2 TMDL Compliance

If there is an approved or established TMDL, then the permittee must comply with the established loads in the TMDL. Approved TMDLs can be found on DEQ's website (https://www.deq.idaho.gov/water-quality/surface-water/tmdls/table-of-sbas-tmdls/) or by contacting the appropriate regional office contact (Table 1).

This condition is necessary to meet the following water quality requirements:

Ensure projects are consistent with waste load and load allocations established in approved TMDLs (IDAPA 58.01.02.055.04 and .05).

2.3 Outstanding Resource Waters

If waters become designated as ORWs during the term of the NWPs, a permittee proposing a project on an ORW must contact the appropriate DEQ regional office and apply for individual certification.

This condition is necessary to meet the following water quality requirements:

Ensure there is no lowering of water quality in any ORW as required by the Idaho Antidegradation Policy (IDAPA 58.01.02.051.03).

2.4 Fill Material

Material subject to suspension, including suspended dredge material, shall be free of easily suspended fine material. The fill material to be placed in waters of the United States shall be clean material only. If dredged material is proposed to be used as fill material and there is a possibility the material may be contaminated, then the permittee must apply the procedures in the *Sediment Evaluation Framework for the Pacific Northwest* (RSET, 2018) to assess and characterize sediment to determine the suitability of dredged material for unconfined-aquatic placement; determine the suitability of post dredge surfaces; and to predict effects on water quality during dredging.

This condition is necessary to meet the following water quality requirements:

Prevent suspension of fine sediment and turbidity in order to provide beneficial use support and compliance with the following water quality standards:

- General Surface Water Criteria for Sediment (IDAPA 58.01.02.200.08)
- Numeric Turbidity Criteria for Aquatic Life (IDAPA 58.01.02.250.02.e)
- Numeric turbidity criteria for protection of domestic water supply (IDAPA 58.01.02.252.01.b)
- Point source wastewater treatment requirements (IDAPA 58.01.02.401.02)

Prevent suspension of hazardous, toxic, or deleterious materials or other pollutants that may be associated with fill material in order to ensure beneficial use support and compliance with the following water quality standards:

- General Surface Water Criteria for hazardous materials (IDAPA 58.01.02.200.01), toxic substances (IDAPA 58.01.02.200.02), deleterious materials (IDAPA 58.01.02.200.03), excess nutrients (IDAPA 58.01.02.200.06), or oxygen demanding materials (IDAPA 58.01.02.200.09)
- Numeric toxics criteria for aquatic life and human health (IDAPA 58.01.02.210)

2.5 Turbidity

If no visible sediment plume is present, it is reasonable to assume that there is no potential violation of the water quality criteria for turbidity (IDAPA 58.01.02.250.02.e). Therefore, turbidity monitoring is only required when activities cause a visible sediment plume.

A properly and regularly calibrated turbidimeter is required for measurements analyzed in the field, but grab samples may be collected and taken to a laboratory for analysis. When monitoring is required a sample must be taken at an undisturbed area immediately up-current from in-water disturbance or discharge to establish background turbidity levels. Background turbidity, latitude/longitude, date, and time must be recorded prior to monitoring down-current. Then a sample must be collected immediately down-current from the in-water disturbance or point of discharge and within any visible sediment plume. The turbidity, latitude/longitude, date, and time must be recorded for each sample. The downstream sample must be taken immediately following the upstream sample in order to obtain meaningful and representative results.

Results from the down-current sampling point must be compared to the up-current or background level to determine whether project activities are causing an exceedance of state WQS. If the downstream turbidity is 50 NTUs or more greater than the upstream turbidity, then the project is causing an exceedance of the WQS (IDAPA 58.01.02.250.02.e).
Any exceedance of the turbidity standard must be reported to the appropriate DEQ regional office (Table 1) within 24 hours.

The following steps should be followed to ensure compliance with the turbidity standard:

1. If a visible plume is observed, collect turbidity measurements at 1) an upstream location; and, 2) from within the plume, and compare the results to Idaho's instantaneous numeric turbidity criterion (50 NTU over background).
2. If turbidity in the plume is less than 50 NTU instantaneously over the background turbidity continue monitoring as long as the plume is visible. If turbidity exceeds background turbidity by more than 50 NTU instantaneously then stop all earth disturbing construction activities immediately and proceed to Step 3. If turbidity exceeds background turbidity by more than 25 NTU, or if a visible plume is observed for more than 10 consecutive days, then stop all earth disturbing construction activities and proceed to Step 3.
3. Notify the appropriate DEQ regional office within 24 hours of any turbidity criteria exceedance. Take action to address the cause of the exceedance. That may include inspecting the condition of project BMPs. If the BMPs are functioning to their fullest capability, then the permittee must modify project activities and/or BMPs to correct the exceedance.
4. Earth disturbing activities may continue once turbidity readings return to within 50 NTU over background instantaneously; or, if turbidity has exceeded 25 NTU over background for more than ten consecutive days, once turbidity readings have no longer exceeded 25 NTU over background for at least 24 consecutive hours.

Copies of daily logs for turbidity monitoring must be available to DEQ upon request. The report must describe all exceedances and subsequent actions taken, including the effectiveness of the action.

This condition is necessary to meet the following water quality requirements:

Ensure that activities do not impair beneficial uses, and ensure and document compliance with the following water quality standards:

- General Surface Water Criteria for Sediment (IDAPA 58.01.02.200.08)
- Numeric Turbidity Criteria for Aquatic Life (IDAPA 58.01.02.250.02.e)
- Numeric turbidity criteria for protection of domestic water supply (IDAPA 58.01.02.252.01.b)

2.6 Mixing Zones

No mixing zones are authorized through this certification. If a mixing zone, or alternatively, a point of compliance, is desired, the permittee must apply for an individual certification and must contact the appropriate DEQ regional office (Table 1) to request authorization for a mixing zone.

This condition is necessary to meet the following water quality requirements:

Ensure any mixing zone is properly authorized in accordance with the Idaho Mixing Zone Policy (IDAPA 58.01.02.060).

2.7 Culverts

To prevent road surface and culvert bedding material from entering a stream, culvert crossings must include best management practices to retain road base and culvert bedding material. For perennial waters, the permittee should consider the Idaho Stream Channel Alterations rules (IDAPA 37.03.07). Another source of BMPs for culvert installation can be found in the Idaho Forest Practices Act (IDAPA 20.20.01). Examples of best management practices include, but are not limited to: parapets, wing walls, inlet and outlet rock armoring, compaction, suitable bedding material, anti-seep barriers such as bentonite clay, or other acceptable roadway retention systems.

This condition is necessary to meet the following water quality requirements:

Control of erosion, sediment, and turbidity to provide beneficial use support and compliance with the following water quality standards:

- General Surface Water Criteria for Sediment (IDAPA 58.01.02.200.08)
- Numeric Turbidity Criteria for Aquatic Life (IDAPA 58.01.02.250.02.e)
- Numeric turbidity criteria for protection of domestic water supply (IDAPA 58.01.02.252.01.b)

2.8 Wood Preservatives

DEQ's *Guidance for the Use of Wood Preservatives and Preserved Wood Products In or Around Aquatic Environments* must be considered when using treated wood materials in the aquatic environment. Within this guidance document DEQ references the *Best Management Practices*

for the Use of Treated Wood in Aquatic and Wetland Environments[3]. This document provides recommended guidelines for the production and installation of treated wood products destined for use in sensitive environments.

This condition is necessary to meet the following water quality requirements:

Ensure that toxic chemicals are not introduced into waters and to ensure compliance with the following water quality standards:

- General Surface Water Criteria for hazardous materials (IDAPA 58.01.02.200.01), toxic substances (IDAPA 58.01.02.200.02), and deleterious materials (IDAPA 58.01.02.200.03)
- Numeric toxics criteria for aquatic life and human health (IDAPA 58.01.02.210)

2.9 Reporting of Discharges Containing Hazardous Materials or Deleterious Materials

All spills of hazardous material, deleterious material or petroleum products which may impact waters (ground and surface) of the state shall be immediately reported. Call 911 if immediate assistance is required to control, contain or clean up the spill. If no assistance is needed in cleaning up the spill, contact the appropriate DEQ regional office in Table 2 during normal working hours or Idaho State Communications Center after normal working hours. If the spilled volume is above federal reportable quantities, contact the National Response Center.

For immediate assistance: Call 911

National Response Center: (800) 424-8802

Idaho State Communications Center: (800) 632-8000

Table 2. Idaho DEQ regional contacts for reporting discharge or spill of hazardous or deleterious materials.

Regional Office	*Toll Free Phone Number*	*Phone Number*
Boise	888-800-3480	208-373-0550
Coeur d'Alene	877-370-0017	208-769-1422
Idaho Falls	800-232-4635	208-528-2650
Lewiston	877-541-3304	208-799-4370
Pocatello	888-655-6160	208-236-6160
Twin Falls	800-270-1663	208-736-2190

[3] Western Wood Preservers Institute, Wood Preservation Canada, Southern Pressure Treaters' Association, and Southern Forest Products Association. 2011. "Best Management Practices: For the Use of Treated Wood in Aquatic and Wetland Environments" Vancouver, WA: Western Wood Preservers Institute.

This condition is necessary to meet the following water quality requirements:

Ensure compliance with the following water quality standards:

- Hazardous Material Spills (IDAPA 58.01.02.850)
- Petroleum release reporting, investigation, and confirmation (IDAPA 58.01.02.851)
- Petroleum release response and corrective action (IDAPA 58.01.02.852)

2.10 Other Conditions

This certification is conditioned upon the requirement that if there are material modifications of the NWPs or the permitted activities—including without limitation, significant changes from the draft NWPs to final NWPs, or significant changes to the draft Regional Conditions, then DEQ must re-evaluate the certification to determine compliance with Idaho WQS and to provide additional certification pursuant to Section 401.

This condition is necessary to ensure that DEQ can evaluate any material modification to ensure it meets water quality requirements and complies with the Idaho antidegradation policy (IDAPA 58.01.02.051) and its implementation (IDAPA 58.01.02.052), general surface water quality criteria (200), numeric toxics criteria for aquatic life and human health (IDAPA 58.01.02.210), numeric criteria for aquatic life (IDAPA 58.01.02.250), recreation (IDAPA 58.01.02.251), and water supply uses (IDAPA 58.01.02.252).

3 Projects for Which Certification Is Denied

DEQ cannot certify that the following activities will comply with water quality requirements, including State WQS and other appropriate requirements of state law, and is therefore denying certification for the activities listed below.

For activities for which certification has been denied, the applicant will be required to request an individual certification before the activity can be conducted. Individual certification requests will provide DEQ with the opportunity to review project details and determine if additional conditions are necessary to ensure that water quality requirements will be met.

Upon review and evaluation of individual certification requests, DEQ may 1) certify without condition, 2) provide individual certification with conditions necessary to ensure water quality requirements will be met, or 3) deny certification for projects that will not meet water quality requirements.

3.1 NWPs denied

DEQ denies certification for all activities proposed to occur on waters designated as ORWs during the term of the permit. This denial is necessary to ensure compliance with the water quality requirements of Idaho's antidegradation policy (IDAPA 58.01.02.051.03) and implementation procedures (IDAPA 58.01.02.052.09.g).

In addition, the following NWPs are denied certification for all Idaho waters. Projects seeking coverage under these NWPs must request individual certification from DEQ.

NWP 16 - Return Water from Upland Contained Disposal Areas

Basis for denial:

Return water from upland disposal areas has the potential to contribute turbidity, sediment, and other toxic and non-toxic pollutants to receiving waters.

To ensure that discharge from upland contained disposal areas meets water quality requirements, DEQ must evaluate the quality of the return water and evaluate the potential pollutants associated with return water on a case-by-case basis to determine compliance with general surface water quality criteria (IDAPA 58.01.02.200); numeric toxics criteria for aquatic life and human health (IDAPA 58.01.02.210); and use specific criteria for aquatic life (IDAPA 58.01.02.250), recreation (IDAPA 58.01.02.251), and water supply uses (IDAPA 58.01.02.252).

NWP 23 - Approved Categorical Exclusions

Basis for denial:

DEQ is unable to determine that meeting the requirements for categorical exclusion under the National Environmental Policy Act will meet state water quality requirements.

DEQ will evaluate categorically excluded activities on a case-by-case basis to determine compliance with general surface water quality criteria (IDAPA 58.01.02.200); numeric toxics criteria for aquatic life and human health (IDAPA 58.01.02.210); and use specific criteria for aquatic life (IDAPA 58.01.02.250), recreation (IDAPA 58.01.02.251), and water supply uses (IDAPA 58.01.02.252).

NWP 53 – Removal of Low-Head Dams

Basis for denial:

Material released from the removal of low head dams has the potential to contribute turbidity, sediment, and other toxic and non-toxic pollutants to receiving waters.

In order to ensure that release of materials from the removal of low head dams meets water quality requirements, DEQ must evaluate the potential pollutants associated with this release on a case-by-case basis to determine compliance with general surface water quality criteria (IDAPA 58.01.02.200); numeric toxics criteria for aquatic life and human health (IDAPA 58.01.02.210); and use specific criteria for aquatic life (IDAPA 58.01.02.250), recreation (IDAPA 58.01.02.251), and water supply uses (IDAPA 58.01.02.252).

3.2 NWPs partially denied

The following activities have the potential to disturb significant areas and could disturb a significant fraction of entire Assessment Units, causing permanent and significant impairment of designated and existing beneficial uses. The conditions associated with the NWP, regional conditions, and the conditions associated with this certification are not sufficient to provide DEQ with assurance that projects of this magnitude would not result in impairment of existing or

designated beneficial uses in all waters, and potentially increase degradation in high quality (Tier II) waters.

In order to meet the requirements of Idaho's antidegradation implementation procedures (IDAPA 58.01.02.052), ensure that beneficial uses are not impaired, and ensure compliance with general surface water quality criteria for sediment (IDAPA 58.01.02.200.08), DEQ must evaluate these projects on a case-by-case basis and provide individual certification where applicable.

3.2.1 NWPs 3, 13, and 14

The 2020 NWPs 3, 13, and 14 require preconstruction notification (PCN) for certain activities when it is necessary for the district engineer to review activities to ensure only minimal adverse environmental effects.

While the additional district engineer review is intended to ensure that activities will cause only minimal adverse environmental effects, it is not reasonable to expect that the district engineer review will consider the requirements of Idaho's antidegradation implementation procedures (IDAPA 58.01.02.052) when making their determination. Consequently, DEQ cannot certify that activities requiring PCN under these NWPs would not cause degradation of water quality, and therefore cannot certify that these activities would meet Idaho's antidegradation implementation procedures (IDAPA 58.01.02.052).

Therefore, DEQ is denying certification for the following activities that require PCN under the proposed 2020 NWPs:

NWP 3 – Maintenance

Activities Denied Certification

- Activities authorized by paragraph (b) of NWP 3

NWP 13 – Bank Stabilization

Activities Denied Certification:

- activities involving discharge into special aquatic sites;
- activities in excess of 500 linear feet;
- activities that involve discharge of greater than one cubic yard per running foot measured along the length of the treated bank below the plane of the ordinary high water mark

NWP 14 – Linear Transportation Projects

Activities Denied Certification:

- activities resulting in the loss of waters of the United States in excess of 1/10 acre;
- discharge in a special aquatic site, including wetlands

3.2.2 NWPs 12, C, and D

The 2017 NWP 12 included activities proposed to be permitted under the 2020 NWPs C and D.

The 2017 NWP 12 required PCN for activities that, among other thresholds, involved mechanized clearing in forested wetlands, exceeded 500 linear feet, or that resulted in loss of greater than 1/10 acre of waters of the United States. The 2020 NWP proposes removal of these thresholds for PCN, and does not require additional review from the ACOE district engineer to ensure only minimal adverse environmental effects.

Without the requirement for PCN and additional review from the district engineer, DEQ cannot certify that these activities will not result in degradation. Therefore, DEQ is denying certification for the following activities:

NWP 12 – Oil or Natural Gas Pipeline Activities

Activities Denied Certification:

- activities that involve mechanized clearing of a wooded wetland;
- oil or natural gas pipelines in waters of the United States that exceed 500 linear feet or that run adjacent to a water body for greater than 500 linear feet;
- activities where discharge will result in loss of greater than 1/10-acre, as determined by ACOE, of waters of the United States

NWP C – Electric Utility Line and Telecommunications Activities

Activities Denied Certification:

- activities that involve mechanized clearing of a wooded wetland;
- electric utility line and telecommunications activities in waters of the United States that exceed 500 linear feet;
- activities where discharge will result in loss of greater than 1/10-acre, as determined by ACOE, of waters of the United States

NWP D – Utility Line Activities for Water and Other Substances

Activities Denied Certification:

- activities that involve mechanized clearing of a wooded wetland;
- utility line activities in waters of the United States that exceed 500 linear feet;
- activities where discharge will result in loss of greater than 1/10-acre, as determined by ACOE, of waters of the United States

3.2.3 NWPs 21, 29, 39, 40, 42, 43, 44, 50, 51, 52, and E

The 2017 NWPs for the following activities had a 300 linear foot limit for losses of stream bed. The 2020 NWP proposes removal of the 300 linear foot limit for losses of stream bed and instead rely solely on the ½ acre limit.

The median bankfull width measured from 48 wadeable streams monitored in 2010 as part of DEQ's Beneficial Use reconnaissance Program (BURP) was 19.7 feet. A loss of ½ acre at this stream width would correspond to 1,105 linear feet of loss, or the equivalent of 0.2 miles of stream. DEQ cannot certify that losses of this magnitude of stream bed, or that losses of stream

bed based solely on the ½ acre limit, would not result in permanent degradation. Therefore, DEQ is denying certification for the following activities that exceed the 300 linear foot limit previously imposed by the 2017 NWP:

NWP 21 – Surface Coal Mining Activities

Activities Denied Certification:

- activities resulting in loss in excess of 300 linear feet of streambed
- activities resulting in loss in excess of ½ acre of jurisdictional wetlands

NWP 29 – Residential Developments

Activities Denied Certification:

- activities resulting in loss in excess of 300 linear feet of streambed
- activities resulting in loss in excess of ½ acre of jurisdictional wetlands

NWP 39 – Commercial and Institutional Developments

Activities Denied Certification:

- activities resulting in loss in excess of 300 linear feet of streambed
- activities resulting in loss in excess of ½ acre of jurisdictional wetlands

NWP 40 – Agricultural Activities

Activities Denied Certification:

- activities resulting in loss in excess of 300 linear feet of streambed
- activities resulting in loss in excess of ½ acre of jurisdictional wetlands

NWP 42 – Recreational Facilities

Activities Denied Certification:

- activities resulting in loss in excess of 300 linear feet of streambed
- activities resulting in loss in excess of ½ acre of jurisdictional wetlands

NWP 43 – Stormwater Management Facilities

Activities Denied Certification:

- activities resulting in loss in excess of 300 linear feet of streambed
- activities resulting in loss in excess of ½ acre of jurisdictional wetlands

NWP 44 – Mining Activities

Activities Denied Certification:

- activities resulting in loss in excess of 300 linear feet of streambed
- activities resulting in loss in excess of ½ acre of jurisdictional wetlands

NWP 50 – Underground Coal Mining Activities

Activities Denied Certification:

- activities resulting in loss in excess of 300 linear feet of streambed
- activities resulting in loss in excess of ½ acre of jurisdictional wetlands

NWP 51 – Land Based Renewable Energy Generation Facilities

Activities Denied Certification:

- activities resulting in loss in excess of 300 linear feet of streambed
- activities resulting in loss in excess of ½ acre of jurisdictional wetlands

NWP 52 – Water-Based Renewable Energy Generation Pilot Projects

Activities Denied Certification:

- activities resulting in loss in excess of 300 linear feet of streambed
- activities resulting in loss in excess of ½ acre of jurisdictional wetlands

NWP E – Water Reclamation and Reuse Facilities

Activities Denied Certification:

- activities resulting in loss in excess of 300 linear feet of streambed
- activities resulting in loss in excess of ½ acre of jurisdictional wetlands

4 Right to Appeal Final Certification

The final Section 401 Water Quality Certification may be appealed by submitting a petition to initiate a contested case, pursuant to Idaho Code § 39-107(5) and the "Rules of Administrative Procedure before the Board of Environmental Quality" (IDAPA 58.01.23), within 35 days of the date of the final certification.

Questions or comments regarding the actions taken in this certification should be directed to Jason Pappani, State Office IDEQ, at (208) 373-0515 or via email at jason.pappani@deq.idaho.gov.

Mary Anne Nelson, PhD
Surface and Wastewater Division
Administrator

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 N Hilton Street, Boise, ID 83706
(208) 373-0502

Brad Little, Governor
Jess Byrne, Director

MEMORANDUM

TO: James Joyner, Chief, Upper Snake and Idaho Panhandle Branch, U.S. Army Corps of Engineers

FROM: Mary Anne Nelson, Surface and Wastewater Division Administrator of the Department of Environmental Quality

DATE: 01/10/23

SUBJECT: 2020 Final § 401 Water Quality Certification Contact and Hyperlink Updates

The Department of Environmental Quality (DEQ) is submitting an update for agency contacts and hyperlinks to be included as an attachment to the § 401 Water Quality Certification dated December 4, 2020, upon authorization of a federal permit or license.

Table 1. DEQ state and regional office contacts.

Regional Office	Address	Phone Number	Email
Boise	1445 N. Orchard St., Boise, ID 83706	(208) 373-0490	*chase.cusack@deq.idaho.gov*
Coeur d'Alene	2110 Ironwood Parkway, Coeur d'Alene, ID 83814	(208) 666-4605	*chantilly.higbee@deq.idaho.gov*
Idaho Falls	900 N. Skyline, Suite B., Idaho Falls, ID 83402	(208) 528-2679	*alex.bell@deq.idaho.gov*
Lewiston	1118 "F" St., Lewiston, ID 83501	(208) 799-4874	*sujata.connell@deq.idaho.gov*
Pocatello	444 Hospital Way, #300 Pocatello, ID 83201	(208) 239-5007	*matthew.schenk@deq.idaho.gov*
Twin Falls	650 Addison Ave. W., Suite 110, Twin Falls, ID 83301	(208) 737-3877	*sean.woodhead@deq.idaho.gov*
State Office	1410 N. Hilton St., Boise, ID 83706	(208) 373-0570	*tambra.phares@deq.idaho.gov*

Table 2. Updated hyperlinks.

Section	Hyperlink
1.2	*Integrated Report*
1.2	*Final 2022 Integrated Report Interactive Mapper*
2.1	*Catalog of Storm Water Best Management Practices*
2.2	*Approved TMDLs*
2.8	*Guidance for the Use of Wood Preservatives and Preserved Wood Products In or Around Aquatic Environments*
2.8	*Best Management Practices for the Use of Treated Wood in Aquatic and Wetland Environments*

Please direct questions or comments about the actions taken in the 2020 Final § 401 Water Quality Certification to Tambra Phares, State Office DEQ, (208) 373-0187, or email at *tambra.phares@deq.idaho.gov*.

APPROVAL: 01/10/2023

Mary Anne Nelson, PhD
Department of Environmental Quality
Surface and Wastewater Division Administrator

Date

MILLEMANN PEMBERTON & HOLM LLP
ATTORNEYS AT LAW
Mailing Address: P.O. Box 1066, McCall, ID 83638
Physical Address: 706 North First St., McCall, ID 83638

STEVEN J. MILLEMANN (sjm@mpmplaw.com)
AMY N. PEMBERTON (amy@mpmplaw.com)
AMY K. HOLM (aholm@mpmplaw.com)

TELEPHONE (208) 634-7641
FACSIMILE (208) 634-4516

OBJECTION TO FINDINGS OF FACT, CONCLUSIONS OF LAW, AND DECISION

October 3, 2023

City of McCall
Brian Parker
Planning & Zoning Commission
216 East Park Street
McCall, Idaho 83638

Re: Appeal of FPDP-23-01 Floodplain Development Permit Application for River's Crossing Lot 19 Block 2, Application filed January 23, 2023, Administrative Denial emailed March 31, 2023

Dear Mr. Brian Parker and Planning & Zoning Commission:

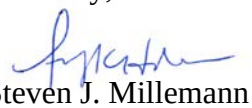
On behalf of our clients Dwain and Cindy Sanders, we provide this written Objection to the Findings of Fact, Conclusions of Law, and Decision as drafted by City staff and dated October 3, 2023. Our Objection is based on the following:

1. The Sanders object to the findings of fact contained on page 6 under subparagraph 1. "The placement of fill will create harm as defined under McCall Code Section 3.7.023(C)(2)." This objection is based on the grounds that this finding wholly ignores the McCall City Code as it applies to the process for developing in the Shoreline and River Environs Zone (MCC 3.7.020) which allows such development with a 404 permit having been issued or when such permit is forthcoming from the army corps of engineers and if a permit requirement is not met, the City may revoke its approval. MCC 3.7.023(B)(3). The Sanders also reserve their argument on appeal that the Shoreline and River Environs Zone code section does not apply until the Sanders develop a single-family home.
2. McCall City Code governs a process for filling of wetlands set forth in MCC 9.8.042 and MCC 9.8.043 which clearly provides a path for the Sanders to go through the process of a map amendment to bring the very small area in the wetland (.15 acres of a parcel sized at 5.29 acres) and raise that area to remap it out of wetland designation.

3. The Administrator's interpretation that the filling of wetlands is unconditionally defined as harm under MCC 3.7.023(C)(2) is inconsistent with a broader reading of McCall City Code. Yes "harm" is defined to include (among other things) the filing of wetlands. But that code section must be read to mean the filling of wetlands without a 404 Permit and without following the process of map amendment and the federally recognized process and standard procedure of map amendment called a Letter of Map Amendment (LOMA) from FEMA. That process starts with a conditional Letter of Map Revision (CLOMR), then the physical raising of the level of the property (here a very small area at .15 acres), then only upon approval from FEMA a final LOMA which would adjust the special flood hazard boundary slightly to be consistent with neighboring properties.
4. The Sanders object to the Conclusion of Law #1 "The City of McCall has provided for the processing of Floodplain Development Permits Applications, pursuant to Title 9, Chapter 8 of McCall City Code" because the Findings of Fact, Conclusions of Law, and Decision as drafted by City staff and dated October 3, 2023 fails to follow those processes and the clearly establish method of a 404 permit, LOMA and CLOMR process.

5. The Sanders object to the Conclusion of Law #3 "The application does not meet the standards for granting of a Floodplain Development Permit" and object to the Planning & Zoning Commission upholding the City Administrator's denial of the floodplain development permit application, and they rely on the robust written record and oral presentation in its Appeal of the City's Administrator's decision denying the application and the Planning & Zoning public hearing held on September 12, 2023.
6. The findings are error as a matter of law, contrary to the evidence on record, and are arbitrary and capricious.

Sincerely,



Steven J. Millemann
Amy K. Holm
On Behalf of Dwain and Cindy Sanders

221 Morgan Dr.

Lot 19, Block 2 Rivers Crossing Sub

Appeal of FPDP-23-01

Dwain and Cindy Sanders

Represented by: Amy Holm, MPH

Appeal of Planning and Zoning Commission's Findings

- P&Z denied the Floodplain Development Permit Application
- City Administrator denied application
- The Floodplain Development Permit Application should be **GRANTED because MCC allows this exact process**

Approval to fill portion of Property with soil to raise elevation of property

1. entire chapter on how to build in 1%, SFHA (“100-year flood” 1% annual chance)
2. but then a 50-foot set back from SFHA
3. ***remap it with FEMA approval***

Owners hold a 404 Permit from the Army Corps of Engineers

- Nationwide Permit
- MCC requires Administrator to work with owners on CLOMR requests
- Title IX, Chapter 8 expressly has a floodplain development permit process which the owners have followed

Property stats

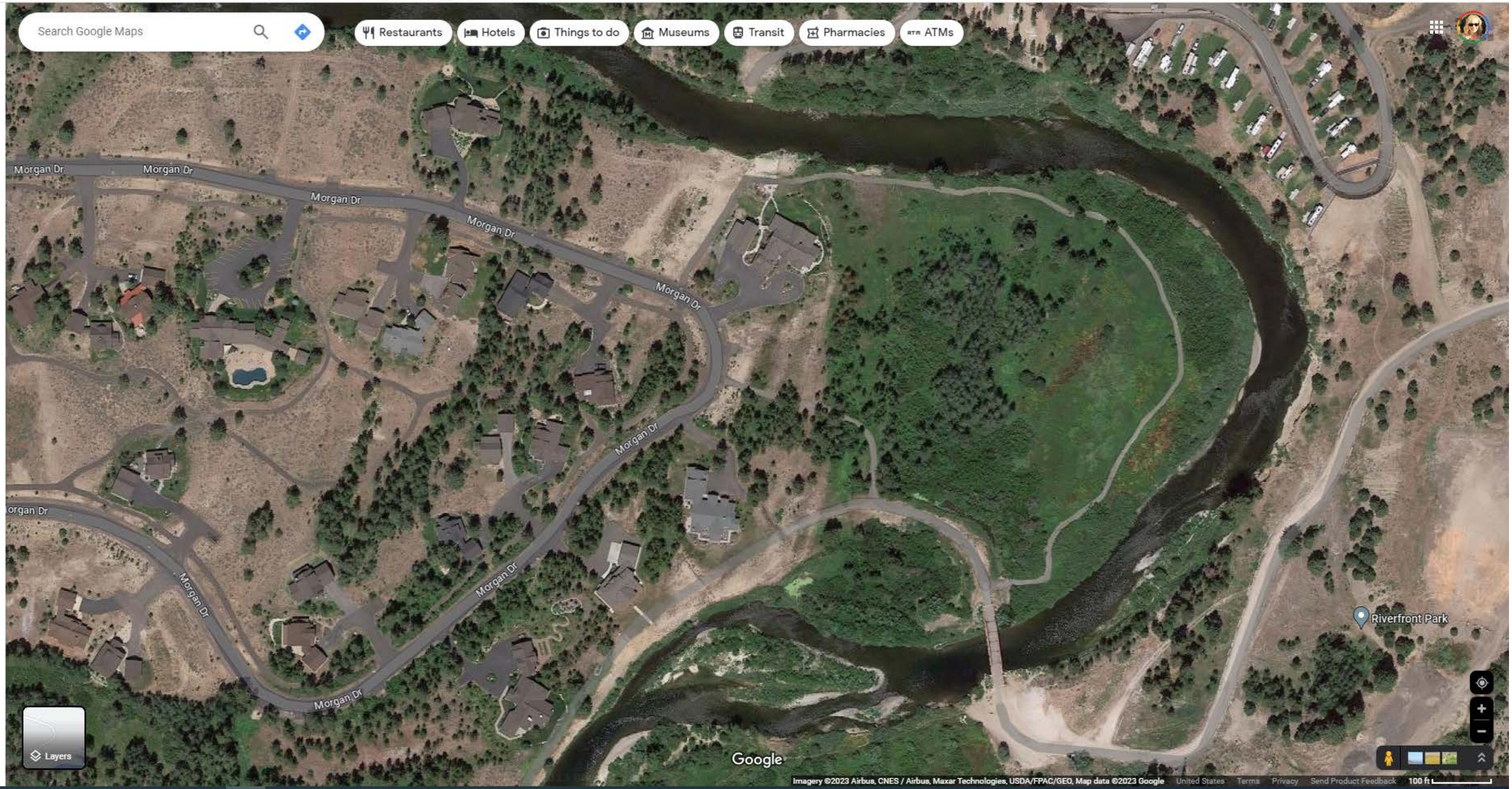
- Rivers Crossing Subdivision
- 5.29 acres
- 2.7 delineated wetlands
- FEMA designation “Special Flood Hazard Area”

CLOMR (Conditional Letter of Map Revision)

- Minor revision of FEMA Map after placement of small amount of fill
  - Map revision has to be approved by FEMA
  - Bring this property into consistency with adjoining properties
- Raise level of property to remove it from Special Flood Hazard Area
- CLOMR process expressly allowed under **MCC 9.8.042(A)(13)**
- 13. Letter Of Map Amendment: When the lowest floor and the lowest adjacent grade of a structure or the lowest ground elevation of a parcel in a special flood hazard area (SFHA) is above the base flood elevation (BFE), advise the property owner of the option to apply for a Letter of Map Amendment (LOMA) from FEMA. Maintain a copy of the LOMA issued by FEMA in the floodplain development permit file

Then install the fill….

Then apply for LOMA (Letter of Map Amendment) – FEMA process



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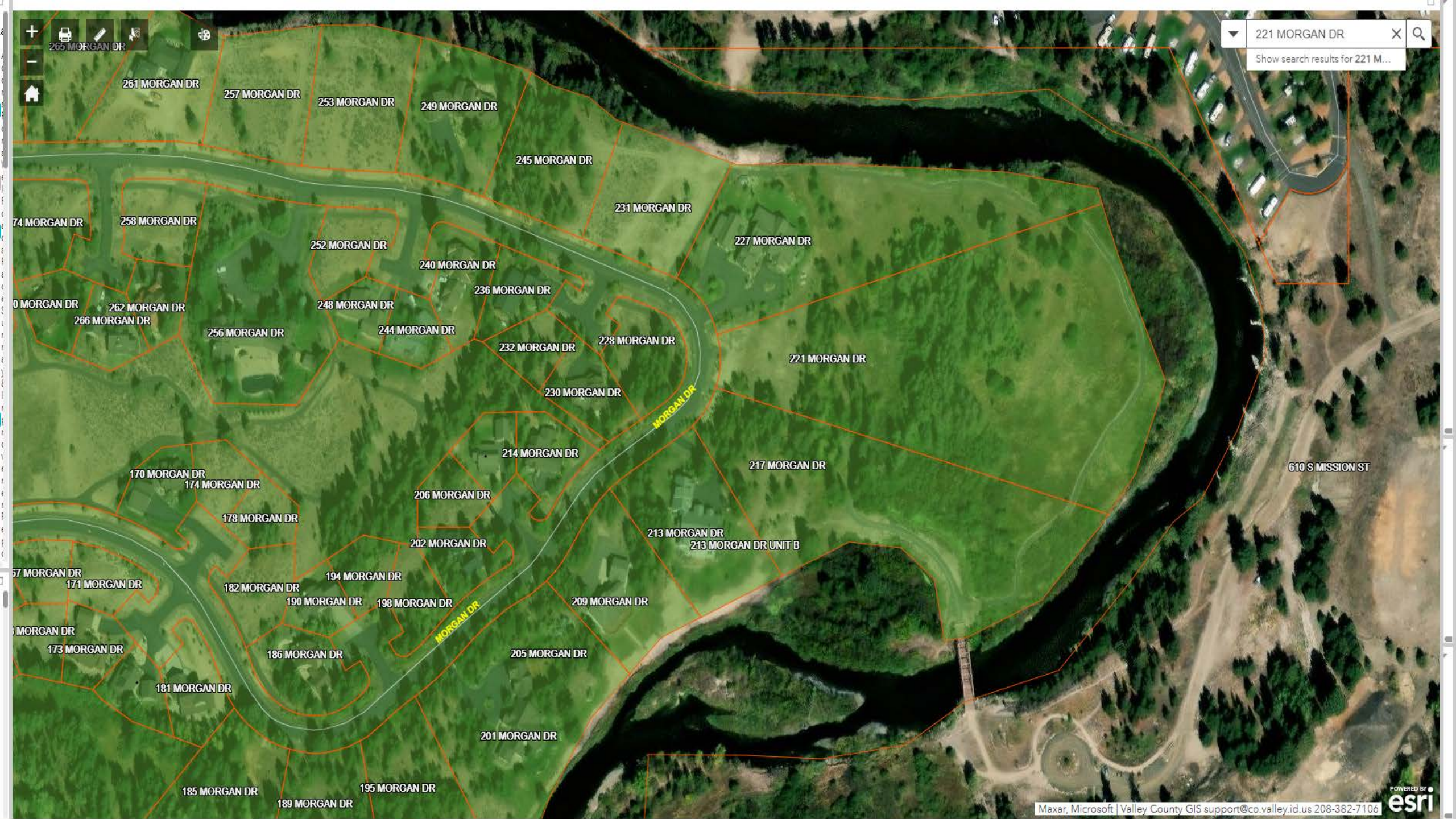
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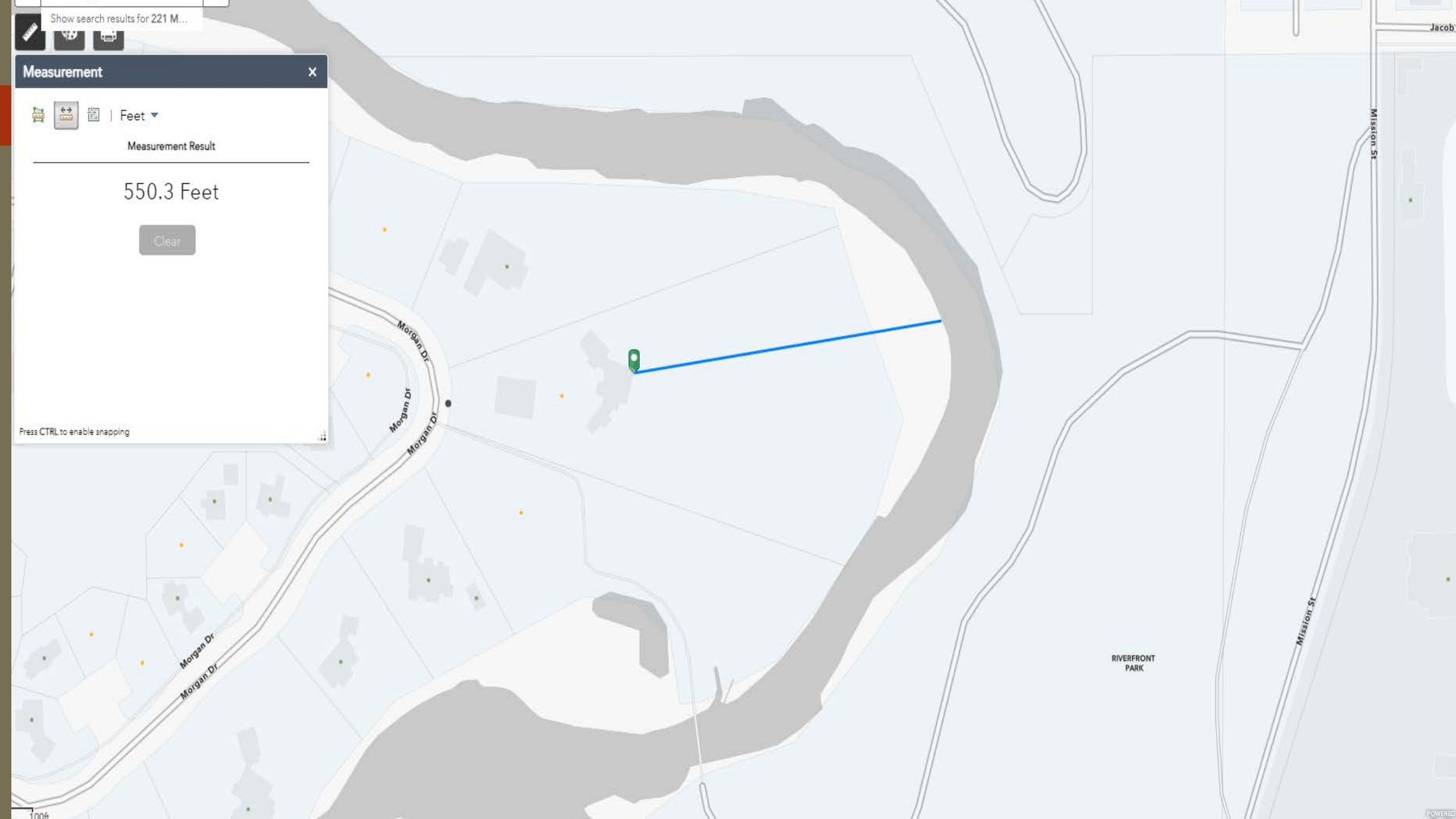
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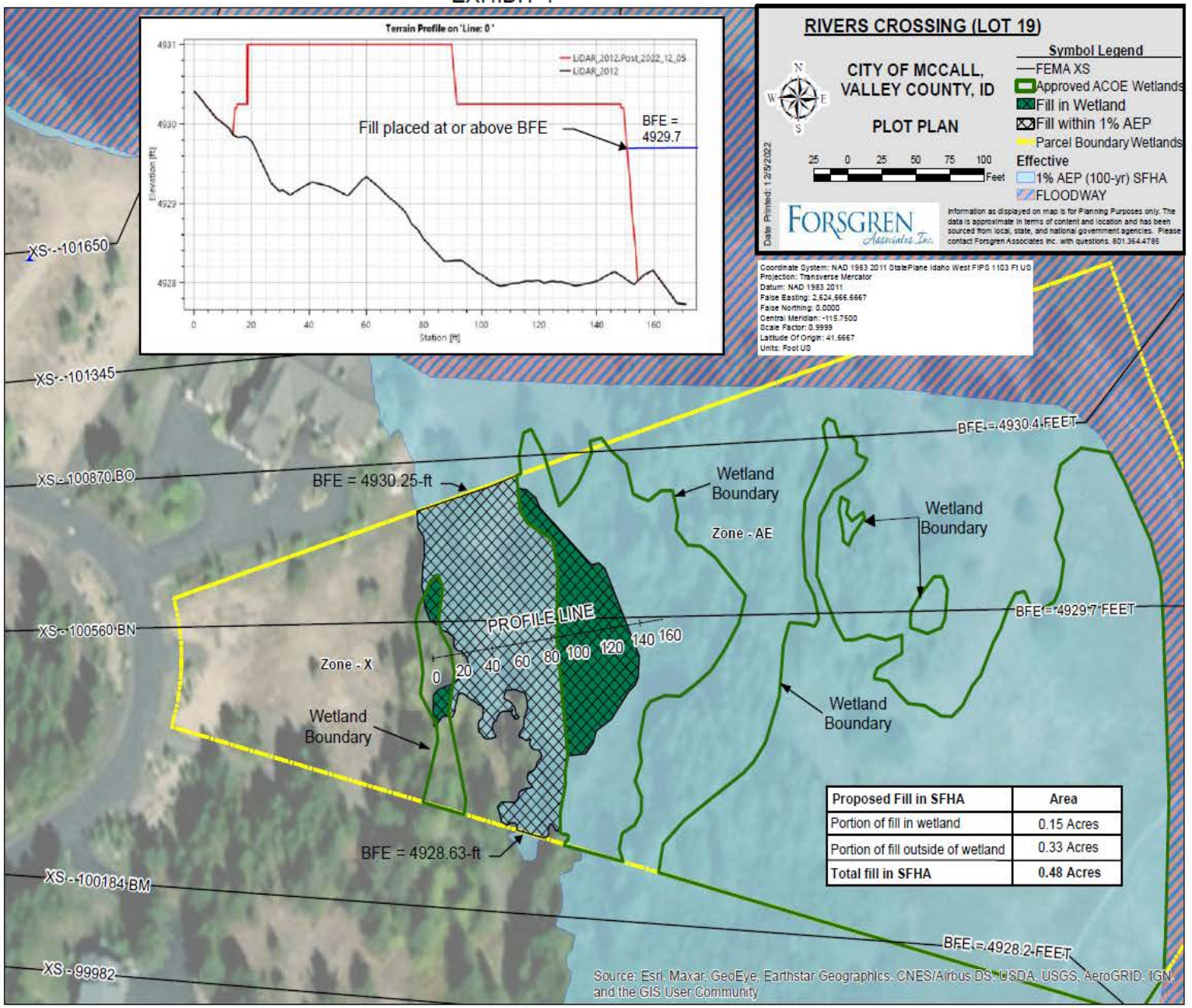
EXHIBIT 1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LiDAR_2012
Fill placed at or above BFE
BFE = 4929.7
Elevation [ft]
Station [ft]
RIVERS CROSSING (LOT 19)
CITY OF MCCALL, VALLEY COUNTY, ID
PLOT PLAN
Symbol Legend
FEMA XS
Approved ACOE Wetlands
Fill in Wetland
Fill within 1% AEP
Parcel Boundary Wetlands
Effective
1% AEP (100-yr) SFHA
FLOODWAY
Feet
FORSGREN Associates Inc.
Coordinate System: NAD 1983 2011 StatePlane Idaho West FIPS 1103 Ft US
Projection: Transverse Mercator
Datum: NAD 1983 2011
False Easting: 2,624,666.6667
False Northing: 0.0000
Central Meridian: -115.7500
Scale Factor: 0.9999
Latitude Of Origin: 41.6667
Units: Foot US
XS - 101650
XS - 101345
XS - 100870 BO
XS - 100560 BN
XS - 100184 BM
XS - 99982
BFE = 4930.4 FEET
BFE = 4930.25-ft
BFE = 4929.7 FEET
BFE = 4928.63-ft
BFE = 4928.2 FEET
Wetland Boundary
Zone - AE
Zone - X
PROFILE LINE
0 20 40 60 80 100 120 140 160
Proposed Fill in SFHA | Area
Portion of fill in wetland | 0.15 Acres
Portion of fill outside of wetland | 0.33 Acres
Total fill in SFHA | 0.48 Acres
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Floodplain Develop. Permit

- January 23, 2023 – applicant filed for a permit to place fill in .48 acres of property of which .15 acres is shrub/scrub wetlands
- March 31, 2023 – Administrative Denial
- November 13, 2023 – P&Z Denial

MCC 9.8.033

- A floodplain development permit shall be required in conformance with the provisions of this chapter prior to the commencement of any development activities within special flood hazard areas
- Development activities include fill under definition found in that code section

Floodplain Development (9.8.043)

- Appears that denial of permit found no grounds of denial on the actual floodplain development code section governing Floodplain development permits
- Application meets requirements of ordinance

Title comparison:

MCC 9.8

(Flood Control Regulations)

- “Filling” wetlands within Special Flood Hazard Area in order to obtain a CLOMR
- Legitimate federal process to do just that
- 9.8.042 – Floodplain Development Permit Applications reviewed by Administrator (City Planner)

MCC 3.7.020

(Shoreline & River Environs)

- This ordinance does not apply (because not currently building a structure in special flood hazard area)
- MCC 3.7.022 (B) No building and no land filling shall be permitted within a floodway and no building within an area of special flood hazard as such terms are defined in title IX, chapter 8, "Flood Control Regulations (Overlay)", of this code, unless the applicant complies with the standards set forth in **that** chapter.
- When Sanders build, subject to Shoreline and River Environs standards
- Even *if* the Shoreline & River Environs applies, NO finding of harm supported in the record

3.7.020: Shoreline and River Environs Zone PURPOSE:

Payette Lake and the North Fork of the Payette River are critical economic resources of the planning jurisdiction, because they are the distinguishing features of this area making it a destination resort for tourists and summer residents. It is therefore the purpose of this section 3.7.02 to regulate development along and alterations of the shoreline of Payette Lake and the banks and immediate vicinity of the Payette River in order to protect and maintain water quality, fish and wildlife habitat, edge and forest habitat, vistas, and public visual and physical access. (Ord. 821, 2-23-2006, eff. 3-16-2006)

If MCC 3.7.023 applies, standards can be met:

- Prohibitions: No construction, alteration or activity shall cause harm to:
- a. Water quality.
- b. Fish and aquatic habitats.
- c. Wetlands.
- d. Significant wildlife habitat harboring any threatened or endangered species.
- e. Views of, from, or across a lake or river.
- f. To this end, all applications for building permits within this overlay zone, no matter what the permit may be for, shall be accompanied by a plan for the installation of appropriate natural, storm, and melt water drainage and treatment facilities. Such plans for natural, storm and melt water drainage of the property and on and through the property, shall be consistent with best management practices under state and federal storm and melt water regulatory programs to which the city is subject and consistent with other city programs in these regards to the satisfaction of the city.

“Harm” 3.7.023

2. Harm Defined: "Harm" for these purposes means:

a. The creation of conditions which foster runoff of, or other source of fertilizers, toxic substances, or other pollutants or contaminants, into the water;

b. The excessive clearing of natural vegetation or change of natural landforms within the area between the water pool shore contour or high water mark and the fifty foot (50') building setback line;

c. The removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge;

d. The filling or dredging of lake bottom or wetlands;

e. The erection of visual barriers between the lake or river and the roads on the uplands, beyond the extent reasonably necessary for an owner's usage of the land for a permitted use; or

f. The creation of any other condition which would be inconsistent with best management practices under, or threaten a violation of, state and federal storm and melt water regulatory programs to which the city is subject, or fail otherwise to be consistent with other city programs in these regards, all as established to the satisfaction of the city.

3.7.023: REQUIREMENTS FOR DEVELOPMENT:

(B) Permit Criteria: No conditional use or building permit shall be issued, nor is any development, grading, or alteration of any land within this zone permitted, unless the applicant establishes to the satisfaction of the commission and council in the case of a conditional use, or of the administrator in the case of a building permit, that:

. . .

3. A letter is on file from a specialist certified by the United States army corps of engineers wetlands expert that certifies that no wetlands related issues or issues related to fill of navigable waters issues were presented by the proposed development; or that a section 404 permit has been issued or is forthcoming by the corps of engineers, whichever is appropriate, city approval(s) under this title and title IX of this code are contingent upon all applicable section 404 permit requirements being met; if a permit requirement is not met, the city may revoke its approval(s) under this title and title IX of this code

Experts – Forsgren Associates Inc.
July 17, 2023 Report
Patrick Wickman

- Proposed impacts are 0.15 acres would affect scrub-shrub wetlands located away from the River
- Runoff – stormwater and site control best management practices would surround area of disturbance to protect adjacent wetlands
  - Hundreds of feet from Payette River
  - Erosion control
    - Proposed stormwater management basins (6 total), silt fence, catch basins, etc.
    - Stabilized construction

Natural vegetation

- Designed to avoid wetlands, minimize impacts to higher value wetlands
- Only impact wetlands permitted by agencies
- Significant areas to retain existing vegetation
- Remove shrubby and dead aspens

Removal, burial and destruction of features of the water pool shore contour or high water mark, the land below the same, or the immediate upland edge

- Highwater mark has no proximity to Little Payette River
- in this case means the special flood hazard area
- Arbitrary definition as applied here
- Not on banks of Payette River

Conclusion that any placement of fill in wetlands constitutes harms, regardless of whether done pursuant to a valid 404 Permit, is error as matter of law and arbitrary and capricious

Because....

Other processes under MCC

MCC 3.7.023(B)(3)

A SECTION 404 PERMIT HAS BEEN ISSUED

Request:

- Reverse administrative and P&Z denial
- Grant the Sanders' Floodplain Development Permit Application

Thank you.

FPDP-23-01 – 221 Morgan Drive Floodplain Development Permit

Brian Parker, City Planner, Floodplain Administrator

February 8, 2023

Application History

- VAR-20-01/ROS-20-22/SH-20-03
  - Request to waive the fifty foot (50') setback requirement from the ordinary high water mark to facilitate the construction of, 4,080 square foot residence, 4,195 square feet of patio space, 2,941 square feet of detached garage, and 747 square foot accessory dwelling unit
  - Denied February 25, 2021
- Applicant submitted Floodplain Development Permit and Conditional Letter of Map Amendment with Fill (CLOMR-F) Applications on January 23, 2023.
  - Administrative Denial issued March 31, 2023
  - Appealed to McCall Area Planning & Zoning Commission on April 10, 2023
  - Decision upheld by Planning & Zoning Commission on September 12, 2023. Findings of Fact approved November 7, 2023
  - Appealed to McCall City Council on November 17, 2023

Criteria for Granting FPDP

- ✗ Certification that all other local, State, and Federal permits required prior to floodplain development permit issuance have been received.

Abrogation

- McCall Code Section 9.8.031:

  This chapter shall apply to all special flood hazard areas within the jurisdiction of the City of McCall. Nothing in this chapter is intended to allow uses or structures that are otherwise prohibited by the Zoning Ordinance.

- McCall Code Section 9.8.035:

  This chapter shall not in any way repeal, abrogate, impair, or remove the necessity of compliance with any other laws, ordinances, regulations, easements, covenants, or deed restrictions, etcetera. However, where this chapter and another conflict or overlap, whichever imposes more stringent or greater restrictions shall control.

All Local Permits

- McCall Code Section 3.8.02(G):

  Building Permit Required: Until a valid building permit has been issued by the city of McCall, no construction work, including grading, blasting, filling, trenching, tree removal, etc., may be started, except as permitted in section 3.8.03 of this chapter.

Shoreline and River Environs Zone (3.7.021)

The lands between the water pool shore contour of the named lakes and the high water mark of the other named water bodies below, and a line parallel to and one hundred fifty feet (150') away from the **water pool shore contour or high water mark**, except on lots fronting East Lake Street in McCall, where it shall be to Mill Road, but no more than three hundred feet (300'):

(A) Payette Lake.

(B) North Fork of the Payette River.

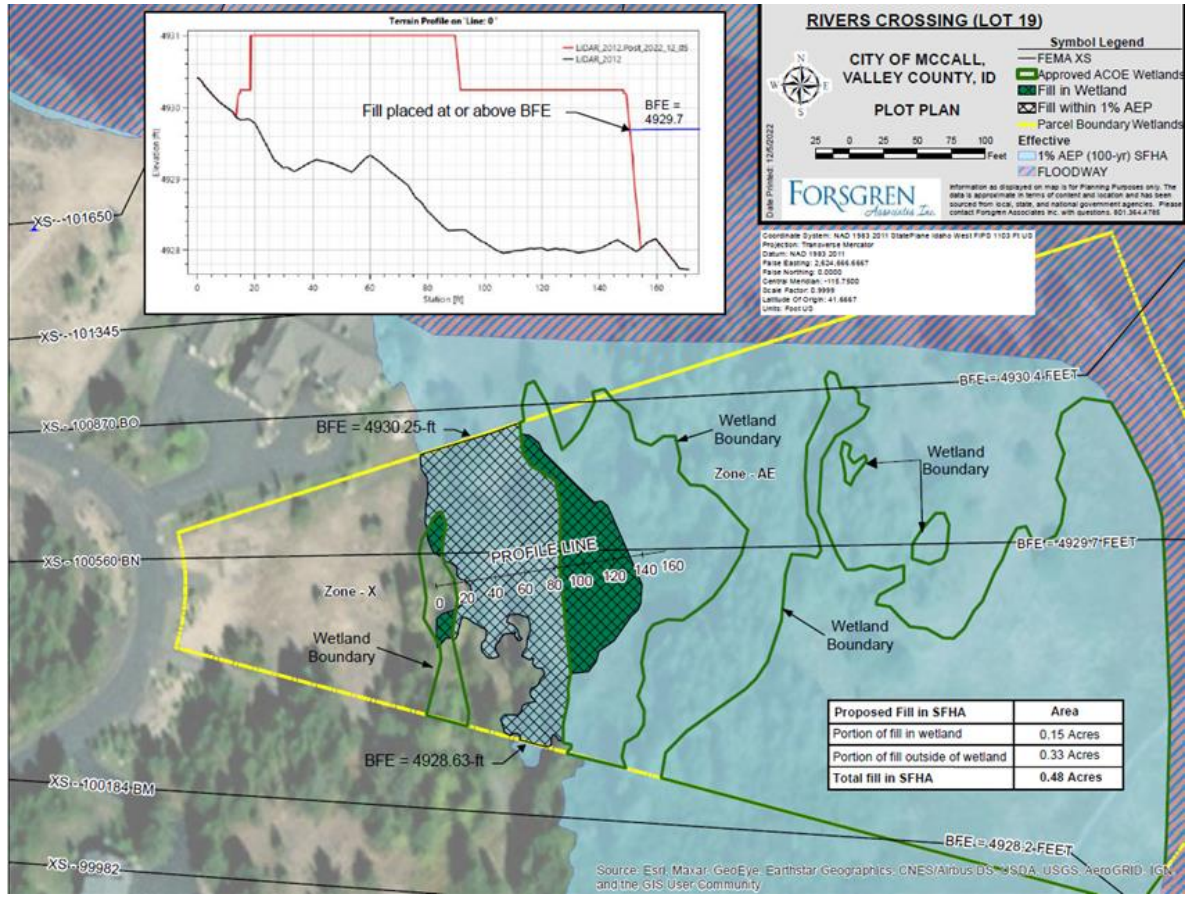
(C) Little Payette Lake and tributaries.

(D) Lake Fork Creek below Little Payette Lake.

The above environs together with so much of the land below such line or high water mark as is affected by a use addressed in this chapter. If any portion of a structure lies within this zone, then the total structure shall be deemed to be within this zone. Docks, landfills, retaining walls, and other uses addressed in this section 3.7.02 shall be deemed within and regulated by this zone without regard to whether all or any part thereof also falls within the "navigable water zone" as defined in this chapter.

Water Pool Shore Contours and High Water Marks (3.7.023(B)(2))

"…in the case of river environs, shall mean the limits of the area of special flood hazard."



Criteria for Shoreline Development

- McCall Code Section 3.7.022(B):

  No conditional use or building permit shall be issued, nor is any development, grading, or alteration of any land within this zone permitted, unless the applicant establishes to the satisfaction of the commission and council in the case of a conditional use, or of the administrator in the case of a building permit, that:

  1. The proposed development meets all applicable requirements of this title and title IX of this code.

  2. The plans accurately identify the **water pool shore contours and high water marks**, which, in the case of river environs, shall mean the limits of the area of special flood hazard.

  3. A letter is on file from a specialist certified by the United States army corps of engineers wetlands expert that certifies that no wetlands related issues or issues related to fill of navigable waters issues were presented by the proposed development; or that a section 404 permit has been issued or is forthcoming by the corps of engineers, whichever is appropriate, city approval(s) under this title and title IX of this code are contingent upon all applicable section 404 permit requirements being met; if a permit requirement is not met, the city may revoke its approval(s) under this title and title IX of this code.

  4. The requirements of the underlying zone are met.

  5. The fifty foot (50') building setback line is met per subsection (C)3(c) of this section.

  6. Proof of stormwater certification training has been provided by the individual applying for the building permit.

Criteria for Shoreline Development

- McCall Code Section 3.7.022(C)(1):

  No construction, alteration or activity shall cause harm to:

  a. Water quality.

  b. Fish and aquatic habitats.

  c. Wetlands.

  d. Significant wildlife habitat harboring any threatened or endangered species.

  e. Views of, from, or across a lake or river.

  f. To this end, all applications for building permits within this overlay zone, no matter what the permit may be for, shall be accompanied by a plan for the installation of appropriate natural, storm, and melt water drainage and treatment facilities. Such plans for natural, storm and melt water drainage of the property and on and through the property, shall be consistent with best management practices under state and federal storm and melt water regulatory programs to which the city is subject and consistent with other city programs in these regards to the satisfaction of the city.

Harm (3.7.023(C)(2))

"Harm" for these purposes means:

The creation of conditions which foster runoff of, or other source of fertilizers, toxic substances, or other pollutants or contaminants, into the water;

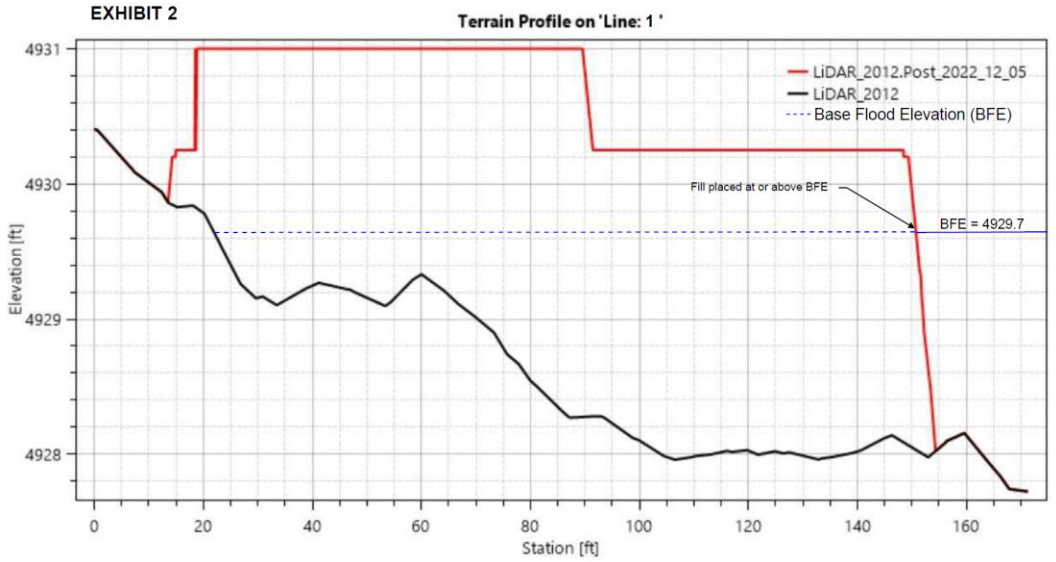
The excessive clearing of natural vegetation or change of natural landforms within the area between the **water pool shore contour or high water mark** and the fifty foot (50') building setback line;

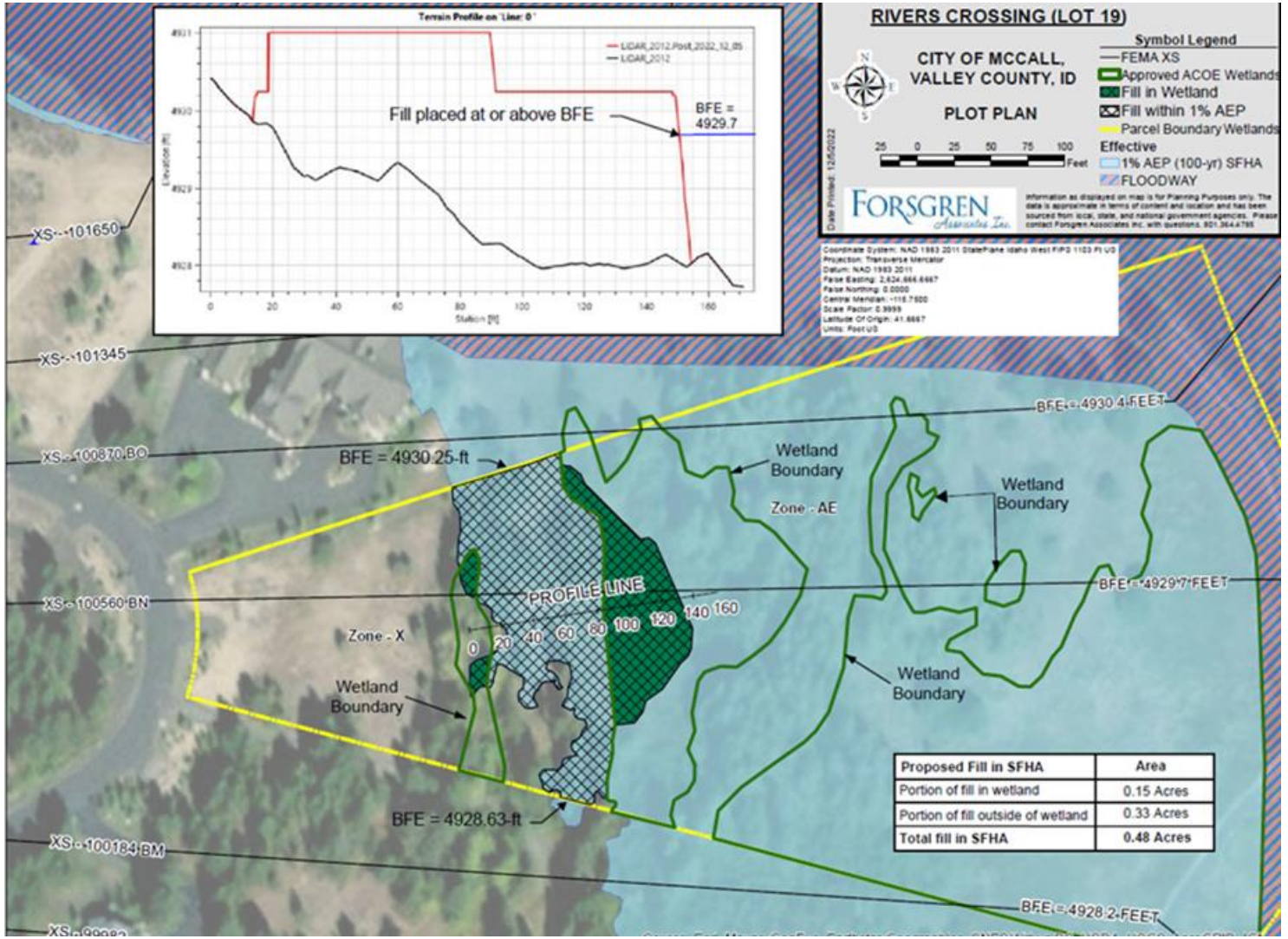
The removal, burial, or destruction in whole or part of boulders, sandy beaches, rocky shores, or other features of the **water pool shore contour or high water mark**, the land below the same, or the immediate upland edge;

The filling or dredging of lake bottom or wetlands;

The erection of visual barriers between the lake or river and the roads on the uplands, beyond the extent reasonably necessary for an owner's usage of the land for a permitted use; or

The creation of any other condition which would be inconsistent with best management practices under, or threaten a violation of, state and federal storm and melt water regulatory programs to which the city is subject, or fail otherwise to be consistent with other city programs in these regards, all as established to the satisfaction of the city.




RIVERS CROSSING (LOT 19)
CITY OF MCCALL,
VALLEY COUNTY, ID
PLOT PLAN
Symbol Legend
FEMA XS
Approved ACOE Wetlands
Fill in Wetland
Fill within 1% AEP
Parcel Boundary Wetlands
Effective
1% AEP (100-yr) SFHA
FLOODWAY
FORSGREN Associates Inc.
Terrain Profile on 'Line: 0'
Fill placed at or above BFE
BFE = 4929.7
XS - 101650
XS - 101345
XS - 100870.BO
XS - 100560.BN
XS - 100184.BM
BFE = 4930.4 FEET
BFE = 4930.25-ft
BFE = 4929.7 FEET
BFE = 4928.63-ft
BFE = 4928.2 FEET
Wetland Boundary
Zone - AE
Zone - X
PROFILE LINE
0 20 40 60 80 100 120 140 160
Proposed Fill in SFHA | Area
Portion of fill in wetland | 0.15 Acres
Portion of fill outside of wetland | 0.33 Acres
Total fill in SFHA | 0.48 Acres

In Conclusion

- The application is to place fill within the area of special flood hazard associated with the North Fork of the Payette River.
  - The application is within the Shoreline and River Environs Zone.
  - The presence of a floodplain development permit application process does not abrogate the remainder of McCall Code.
- The application is to place fill within wetlands.
- The application involves the burial of boulders, sandy beaches, rocky shores, or other features of the water pool shore contour or high water mark and land below the immediate upland edge.
- The application involves excessive clearing of natural vegetation.

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McCALL CITY COUNCIL 216 East Park Street
AGENDA BILL McCall, Idaho 83638

Number **AB 24-072**
Meeting Date **April 4, 2024**

AGENDA ITEM INFORMATION				
SUBJECT: ***City Manager Recruitment Update and direction to staff***		***Department Approvals***	***Initials***	***Originator or Supporter***
		Mayor / Council		
		City Manager		
		Clerk		Originator
		Treasurer		
		Community Development		
		Police Department		
		Public Works		
		Golf Course		
COST IMPACT:		Parks and Recreation		
FUNDING SOURCE:		Airport		
		Library		
TIMELINE:		Information Systems		
		Grant Coordinator		

SUMMARY STATEMENT:

The Recruiter with Peckham & McKinney, Tara Schultz, has reached out to staff with an update on the status of the City Manager recruitment. Ms. Schultz is recommending a change to the recruitment document, particularly The Compensation section. Interim City Manager Kushlan will give an update to Council and a recommendation regarding the recruitment document.

RECOMMENDED ACTION:

Council direction on City Manager Recruitment

RECORD OF COUNCIL ACTION	
MEETING DATE	***ACTION***

Peckham & McKenney
"All about fit"

PECKHAM & MCKENNEY
EXECUTIVE SEARCH

City Manager

City of McCall, Idaho

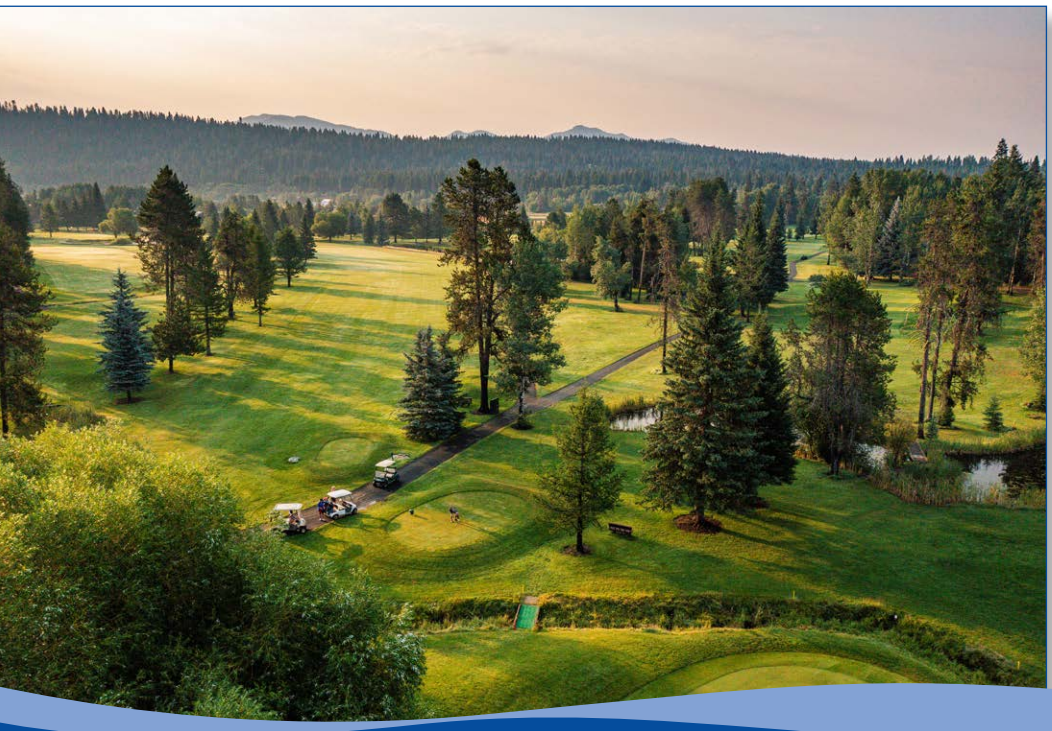
The Community

Nestled in Idaho's picturesque west central mountains, McCall is a vibrant resort town approximately 100 miles north of Boise. McCall is known for its small-town charm and friendly, welcoming atmosphere. Named after its founder, Tom McCall, the city is situated on the southern shore of beautiful Payette Lake at 5,021 feet in elevation and is bordered by towering, pine-covered mountains averaging 8,000-9,000 feet tall. As the largest city in rural Valley County, McCall encompasses 10 square miles and has a population of approximately 3,686 residents that can more than triple during the summer months, special events and holidays. Founded on forestry, mining, and agriculture, industry that is still an integral part of the community's economy, McCall today is an all-season tourist destination for outdoor recreation and adventure enthusiasts.

With the highest average snowfall in the state, McCall is known in the winter for its snowmobiling and alpine, Nordic and backcountry skiing. Area ski resorts boast a combined 2,600

skiable acres featuring vertical drops ranging from 1,800 to 2,800 feet. Its annual Winter Carnival has grown into an iconic Idaho event. Carnival goers are captivated by snow sculptures, Torchlight and Mardi Gras Parades, live music, comedy shows, art auctions, the Idaho Sled Dog Challenge (Iditarod qualifier), and more.

In the summer, McCall's warm, sunny days and cool nights provide the perfect setting to enjoy outdoor music, lakeside public parks, the annual July 4th Lakeside Liberty Fest, and water-related activities on Payette Lake. The north fork of the Payette River flows through McCall and offers fishing and floating in town and world class whitewater rapids to the south. Payette Lake is flanked by soaring pines and lush wetlands that provide excellent opportunities for wildlife viewing. There are numerous hiking and mountain biking trails in and around McCall, as well as five golf courses in the area. Residents of McCall value this precious resource and are enthusiastic about protecting this beautiful environment and being part of the solution to preserve it for future generations.



Residents of McCall enjoy a high quality of life with many amenities, including shopping, dining and cultural opportunities, and an excellent school system (America's Top 1,000 High Schools). Additionally, McCall has a full-service hospital and medical clinic within the St. Luke's network, municipal general aviation airport, a nationally recognized municipal golf course, and a wide range of city-sponsored recreation and sports opportunities.

McCall is strongly influenced by the large number of second homes and the involvement of seasonal residents in the community. There is strong community engagement from year-round residents, and it has long been understood that if a need is not being met in McCall, then there is a ready group of volunteers that will work together to meet that need.

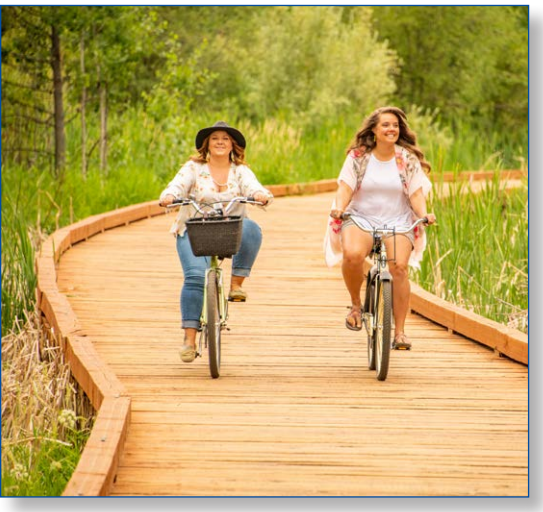
For more information about the City of McCall, please visit **http://www.mccall.id.us**.

The Organization

The McCall City Council is made up of 5 council members whose mayor is elected by the council from among its membership for a two-year term of office. The City of McCall operates under the Council-Manager form of government with a City Manager appointed by the City Council, responsible for implementing the City Council's policies and goals, and managing the day-to-day operations of the City. The City's values are reflected in its Mission and Vision Statements:

Peckham&McKenney
"All about fit"

- **Our Vision** - McCall is a diverse, small town united to maintain a safe, clean, healthy, and attractive environment. It is a friendly, progressive community that is affordable and sustainable.
- **Our Character** - Encourage the mountain character that is unique to McCall, representing a small-town feel, while highlighting the natural setting and a quality-built environment.



- **Our Economy** - Support public agencies, local businesses, entrepreneurship, and recreational tourism, while providing a variety of housing types to meet varied income levels and stages of life.
- **Our Connections** - Foster a sense of exploration and seek to enhance the recreational experience and mobility within the City for visitors and residents through safe walkable places, diverse transportation modes, and efficient transit choices.

The City of McCall is a full-service city employing approximately 80 dedicated and award-winning staff. The organization is comprised of eleven departments consisting of: Police, Community & Economic Development, Public Works (including Streets, and Water), City Clerk, Finance, Parks and Recreation, Airport, Library, Golf Course, Information Systems, and City Manager (including Communications and Human Resources). The General Fund budget for Fiscal-Year 2024 (Oct – Sept) is $11.4 million with the Total Budget (including special revenue and enterprise funds) being $44.1 million. The total budget is approximately 50% Operational and 50% Capital.

The City is known for award-winning planning, and has a track record for successful implementation of its plans. The City has adopted the McCall Area Comprehensive Plan, numerous Master Plans, a Municipal Fiber Utility Strategic Plan, an ADA Transition Plan, as well as various other planning documents and has begun its Climate Action Plan process. Several of these plans have won state and national level American Planning Association awards. The team has been successful at writing and receiving state and federal grant funds and executing cutting-edge projects. The City is nearing completion of their Downtown Core infrastructure and streetscape project and the new public library building, after which the City will begin construction of a new community meeting space and Council Chambers. Additionally, a revenue bond measure is scheduled for the May ballot to fund improvement and expansion of water treatment and storage facilities. A top priority for the City Council is local workforce housing, and coordinating and maintaining close working relationships with regional agencies is key to the success of these future housing projects.

The Position

This position is a wonderful and exciting career and a lifestyle opportunity for an individual with the expectation of becoming part of the fabric of the community, actively involved with and easily accessible to the residents. The ideal City Manager will have a close, trusting working relationship with the City Council, City staff, the community at large, and state and regional partners (e.g., special service districts for wastewater and Fire/EMS, the National Forest Service, County, Tribal, and others). The City is seeking an experienced, professional leader that values integrity, unquestionable honesty, and community. Applicants should be experienced in the policy areas of financial stewardship, community planning and infrastructure, community engagement, environmental stewardship, emergency planning, and workforce housing particularly in a year-round resort community.

The incoming City Manager will inherit an excellent team of strong, creative, and experienced Department Heads who are accustomed to being full partners in the planning and decision-making for the organization. The City Manager will be expected to foster a collaborative and respectful work environment with Department Heads and City staff, as well as the City Council. The ideal candidate should be a natural people person, approachable, genuine, and easy

to engage; an exceptional communicator; a motivational leader that is able to listen and guide their team; honest and forthright with the ability to hold those around them accountable and equally comfortable with being held accountable. As a key member and leader of the McCall team, it is important that the City Manager is a strategic thinker that is equally a creative problem solver and supporter of new ideas and innovations.

The City Manager is likewise expected to foster a strong relationship with the community at large. As the "face of the City" and easily recognized in Town, residents are accustomed to easy access to the City Manager, and the incoming Manager should plan to embrace the role of listening to citizen concerns and actively addressing them. Moreover, the City Manager serves as the ambassador and liaison to the City's regional partners and should be skilled at proactively fostering and maintaining positive external relationships. It is further important that the next City Manager be politically astute and an experienced legislative advocate for the City.

The position requires a Bachelor's degree in public or business administration or a related field; Master's degree preferred. Ten (10) years of experience in municipal government which must include at least: one (1) year as a City Manager; three (3) years as an Assistant/Deputy City Manager; or five (5) years in a Department Head or equivalent level position with supervisory experience; or any equivalent combination. Residency is required within 12 months of the start date.

Search Schedule

Filing Deadline: ..... **April 12, 2024**

Preliminary Interviews: ..... **April 13-26, 2024**

Recommendation of Candidates: .....**May 2, 2024**

Finalist Interview Process: May 10 (Virtual) and May 23-25 (In-person)

These dates have been confirmed, and it is recommended that you plan your calendar accordingly.

The Compensation

The salary range for this City Manager opportunity is $132,800 to $182,000, with a mid point of $154,000, the anticipated hiring range is from $132,800 to $140,400. Appointment will be dependent upon qualifications and experience. The City provides an attractive benefits package, including Public Employee Retirement System of Idaho (PERSI); vacation and sick leave; health, dental, vision, and life insurance; a Health Reimbursement Account (HRA); and a voluntary Flexible Spending Account.

The Recruitment Process

To apply for this exciting career opportunity, please visit our website at:

Peckham & McKenney
www.peckhamandmckenney.com

Resumes are acknowledged within two business days. Contact Tara Schultz at 626-644-1398 or 866-912-1919, if you have any questions regarding this position or the recruitment process.

Photos by the City of McCall, McCall Area Chamber of Commerce and Chad Chase.

PECKHAM & MCKENNEY
EXECUTIVE SEARCH

www.peckhamandmckenney.com